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SUBJECTS FOR SPECIAL CONSIDERATION AT THE NEXT ANNUAL MEETING:

Sprains ..... **G. C. LANE, M. D.**
Urethral Strictures ..... **R. A. URQUHART, M. D.**
Radical Cure of Hernia ..... **A. D. BEVAN, M. D.**
Leucorrhoea ..... **C. C. STRONG, M, D.**
Colds ..... **E. P. FRASER, M. D.**
Scrofula ..... **O. S. BINSWANGER, M. D.**

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PROCEEDINGS

OF THE

ELEVENTH ANNUAL MEETING

OF THE

Oregon State Medical Society,

Held in Portland, May 27, 28 and 29, 1884.

PUBLISHED BY THE SOCIETY.

E. P. FRASER, M. D., SECRETARY,

PORTLAND, OREGON.

Vol. XI.

PORTLAND, OREGON:
GEO. H. HIMES, PRINTER AND PUBLISHER.
1884.

NOTE.

The Oregon State Medical Society, while formally accepting and publishing the various papers read at this session, does not hold itself responsible for the opinions, theories or criticisms therein contained.

LIST OF OFFICERS.

PRESIDENT, - - - S. E. Josephi, M. D., East Portland.
VICE PRESIDENT, - F. B. Eaton, M. D., Portland.
SECRETARY, - - E. P. Fraser, M. D., Portland.

EXECUTIVE BOARD.

R. GLISAN, M. D., - - - - - - - - - - - Portland.
G. M. WELLS, M. D., - - - - - - - - - - Portland.
W. H. WATKINS, M. D., - - - - - - - - - Portland.
R. G. REX, M. D., - - - - - - - - - - - Portland.
K. A. J. MACKENZIE, M. D., - - - - - - - Portland.

Address of Welcome.

BY G. M. WELLS, M. D.

Mr. President and Members of the Oregon State Medical Society:

You represent one of the noblest professions that can engage human effort, for in the darkest hour of disease it may be yours to inspire hope; in the perilous moment of disaster your skill may be the arm to save. As physicians or as surgeons you stand upon the same firm base—common sense, human experience and scientific research. Hand in hand our twin-sister professions approach the bed-side of the feeblest infant, the most delicate lady or the athletic frame of the foundryman, and thus through the day and night, sunshine and storm, inspired by the lovely genii of medicine, you have gone in the discharge of your duty, curing diseases, relieving the distressed, giving rest to the weary, eyes to the blind, and hope to the disconsolate.

But I am not here to make an address on the objects or achievements of our profession; nor to speak of the treatment of the constantly changing phases of disease, nor am I here to amplify or elaborate on the achievements of modern medicine, or the startling discoveries of modern pathology, all of which conspire to demonstrate how noble and how divine is the physician's calling; but I am here to extend to this Society a hearty welcome, as well on the part of the citizens of this city as of the profession, and bespeak for you a pleasant and profitable meeting of the Society.

Your earnest attention is urged to the subject of a law to

regulate the practice of medicine, which will be presented by our Secretary. It is only through this channel that the state legislature can be reached and a law enacted to protect the citizens of the state and our profession from the impositions of quackery.

Papers of interest have been prepared by competent and careful authors on various affections, some of which are classed among the opprobia of medicine, to which you will give willing and worthy attention.

In conclusion, let me urge upon every member of this Society, renewed devotion and energy in our great field of labor, remembering that—

> "'Tis worth the wise man's best of life,
> 'Tis worth a thousand years of strife
> If you can lessen but by one
> The countless ills beneath the sun."

Again, to one and all, I extend a cordial welcome.

OREGON STATE MEDICAL SOCIETY.

ELEVENTH ANNUAL MEETING,

HELD AT

Portland, Oregon, May 27th, 28th and 29th, 1884.

First Day.

TUESDAY, May 27, 1884.

The Society was called to order at 2 o'clock P. M. President W. H. Saylor in the Chair.

Upon roll-call the following members were present: W. H. Saylor, M. D., E. P. Fraser, M. D., James Browne, M. D., A. G. Avery, M. D., O. S. Binswanger, M. D., A. I. Nicklin, M. D., J. W. Givens, M. D., B. A. Owens, M. D., W. H. Watkins, M. D., G. C. Lane, M. D., G. M. Wells, M. D., S. E. Josephi, M. D., J. W. Norris, M. D., F. B. Eaton, M. D., R. Glisan, M. D., and William Jones, M. D.

Dr. G. M. Wells then welcomed the Society to the city of Portland in a short but appropriate address.

A number of communications were then read and referred to the Executive Board.

Dr. Fraser moved that an Obituary Committee consisting of five members, be appointed by the Chair to serve for the coming year.

Motion carried, and the President stated that the Committee would be announced during the session.

The next business in order being the admission of mem bers by invitation, a large number of visiting physicians being present were invited to a seat in the convention and to take part in the proceedings.

P. Frank, M. D., was admitted as a delegate from the Yamhill County Medical Society.

The Executive Board not being ready to report, Dr. Wm. Jones was called upon who read a paper entitled, "Report of a Case of Lateral Lithotomy," etc.

Discussion of this paper was participated in by Drs. J. W. Givens, R. Glisan, W. H. Watkins, James Browne and G. M. Wells.

Paper was referred to the Executive Board.

Mrs. Dr. B. A. Owens then read a paper entitled, "Hygienic and Pre-Natal Influences," which was also referred to the Executive Board.

On motion, the Society adjourned until 10 A. M.

Second Day.

WEDNESDAY, May 28, 1884.

The meeting was called to order by the President at 10 A. M.

A motion to postpone the election of officers until 3 P. M. was carried.

The Executive Board not being ready to report, the next order of business was then taken up, that of reading of papers.

Dr. J. W. Givens, of Salem, being present, read a very interesting and instructive paper entitled, "Headaches."

The paper was referred to the Executive Board and discussed at some length by Drs. C. C. Strong, F. B. Eaton, G. M. Wells and J. L. Hill.

Dr. Woods, of Dallas, being present was, on motion of Dr. Fraser, invited to take part in the deliberations of the Society.

Dr. A. D. Bevan, surgeon of the U. S. M. H. S. was, on motion of Dr. Fraser, elected an honorary member of the Society.

Dr. O. S. Binswanger then read a paper entitled the "Uses of Bismuth."

Discussion was participated in by Drs. Fraser, Avery, Hill, Givens and Wheeler.

On motion, the Society adjourned until 1:30 o'clock.

Afternoon Session.

At 1:30 the President again called the meeting to order.

Dr. A. I. Nicklin being called upon for his paper upon Mal-assimilation, stated that he had been unable to complete it and asked that it be read by title and referred to the Executive Board, which was on motion granted.

Dr. F. B. Eaton then read a paper entitled "Orbital Cellu-

litis as Seqelæ of Constitutional Diseases," which was on motion referred to the Executive Board.

Dr. Holt C. Wilson then read a paper entitled "Diseases of Joints."

The time having arrived for the election of officers and report of Executive Board, discussion of the paper was postponed until the following day at 11 o'clock.

While the Executive Board were preparing their report, Dr. A. D. Bevan, of the United States marine hospital service, reported a case of Czerny's operation for radical cure of hernia. The case created great interest from the fact that it was the first operation of the kind ever performed in the state. In speaking of the operation, Dr. Bevan said that the Czerny, or, as it was more commonly styled, the modern operation for the radical cure of hernia, dated from 1879. It was in fact the outcome of a combination of two operations—the one first performed by the late surgeon, Samuel D. Gross, in 1861, consisting of a closure of the external ring by a permanent suture; the other, consisting of the ligation and amputation of the sac, first performed by Riesel in 1876. The operation, as at present performed, consists of cutting down upon the sac, separating it from the surrounding tissues, ligating the sac close up at its neck, removing the portion below the ligature and allowing the stump to drop into the abdominal cavity. The edges of the ring are then freshened and brought together by permanent suture of catgut, silk or silver wire.

The operation is applicable to all abdominal hernia, but peculiarly so to umbilical and inguinal ruptures. In congenital hernia, where it is impossible to dissect out the sac it is necessary to lay it open and obliterate by a row of catgut sutures. The mortality of the operation, as shown by statis-

tics compiled from several thousand cases, is about eight per cent., but these statistics include many cases of strangulated hernia which are largely responsible for this mortality. In a list of one hundred and twenty-one cases reported by Dr. Hamilton of Liverpool, there were no deaths. Out of thirty cases which had come under Dr. Bevan's observation, there had been no deaths, and but one case in which the operation had failed to produce a radical cure. This exception was due to the fact that the sac returned with contents into the abdominal cavity, preventing the ligation and amputation.

In the light of these statistics, the speaker regarded the operation as warrantable in all cases in which the contents of the sac could not be supported and the patient made comfortable and able to perform his daily avocations with safety, and thought that in such cases the operation exposed the patient to no greater dangers than those arising out of the existence of the hernia. Bearing in mind the many cases calling for such an operation, and the brilliant results which have so far followed it, the Czerny operation might be considered one of the greatest improvements in modern surgery.

Dr. Bevan then presented to the Society the patient upon whom he had performed the operation, and briefly gave the history of the case. The patient, a seaman, age 24, came under observation at St. Vincent's hospital, with an oblique inguinal hernia, which had existed three years. The operation was performed five weeks ago, and the patient had made steady recovery. Perfect and firm closure of the canal had been obtained, and the patient would shortly be discharged to resume his duties.

Dr. J. L. Hill, of Albany, also reported an interesting case of dry gangrene due to thrombus.

The Executive Board then reported favorably upon the following applications for membership: Lydia M. Hunt, M. D., Wm. B. Watkins, M. D., A. C. Ponton, M. D., and Kenneth A. J. Mackenzie, M. D., who were duly elected by the Society.

The Executive Board recommended that Dr. J. E. Kirkpatrick be expelled from the Society for unprofessional conduct.

The report was referred back to the Executive Board for further consideration, as no formal charges had been preferred.

The Society then proceeded to the election of officers for the ensuing year, which resulted as follows:

S. E. Josephi, M. D., of East Portland, President.

F. B. Eaton, M. D., of Portland, Vice-President.

R. Glisan, M. D., of Portland, member of Executive Board for five years.

Kenneth A. J. Mackenzie, M. D., of Portland, member of Executive Board for one year.

Dr. W. H. Watkins then read a paper entitled "Tuberculosis," which created considerable interest, but owing to the lateness of the hour discussion was deferred until the morning session.

The Society then adjourned until 10 o'clock A. M.

Third Day.

WEDNESDAY, May 29, 1884.

The Society was reconvened at 10 o'clock A. M. with President Saylor in the Chair.

The order of business being suspended, that of new business was taken up.

On motion, the Secretary was authorized to employ a short-hand reporter to attend the next annual meeting of the Society.

The following resolution was then read and adopted :

Resolved, That, hereafter during the discussion of papers read before the Society, each member shall be limited to five minutes, and shall not be allowed to speak more than once on the same subject without permission from the Society.

The Secretary then read his financial report for the year just closed. The report was referred to the Executive Board.

The President then announced the Obituary Committee for the coming year, which was as follows :

S. E. Josephi, M. D., of East Portland, Chairman.

L. L. Rowland, M. D., Salem.

J. L. Hill, M. D., Albany.

A. Sharples, M. D., Eugene.

F. A. Bailey, M. D., Hillsboro.

On motion the sum of twenty dollars was appropriated for the Sims' Monument Fund.

President W. H. Saylor then read his valedictory address on retiring from the Chair.

Dr. S. E. Josephi, President elect, was then escorted to the Chair and delivered a short address.

On motion, a vote of thanks was extended to Dr. W. H. Saylor for the able and impartial manner in which he had discharged the duties of his office.

The Secretary then read a list of delinquent members, and on motion, was instructed by the Society to notify every member three years in arrears for dues, that unless paid before the publication of the Transactions their names would be dropped from the roll.

The discussion of the paper of H. C. Wilson, M. D., was then taken up and participated in by Drs. A. D. Bevan, F. B. Eaton, K. A. J. Mackenzie, G. M. Wells, A. G. Avery, W. H. Saylor, E. P. Fraser, and closed by Dr. Wilson.

The Society then proceeded to the selection of a place for the next annual meeting. Salem and Portland being in nomination, Portland was decided upon as being the most convenient place.

The Society then adjourned until 1:30 o'clock.

Afternoon Session.

President S. E. Josephi called the Society to order at 1:30 P. M.

The order of business was so changed as to take up the se-

lection of subjects for special consideration at the next annual meeting, and the following were selected:

SPRAINS.
URETHRAL STRICTURE.
RADICAL CURE OF HERNIA.
LEUCORRHŒA.
COLDS.
SCROFULA.

The Executive Board then presented a report upon the application of R. A. Urquhart, M. D., of Portland, for membership in the Society.

The report being favorable he was duly elected a member.

The Society then proceeded to discuss the paper of Dr. W. H. Watkins on Tuberculosis.

Dr. Givens was invited to open the discussion, which was participated in by Drs. Gray, Bevan, Binswanger, Mackenzie, and closed by Dr. W. H. Watkins.

Dr. Fraser then read a bill for an act to regulate the practice of medicine in the State of Oregon, which was referred to the Executive Board.

Dr. J. W. Givens moved that a prize of thirty and one of twenty dollars be offered for the best paper to be read at the next annual meeting, the subjects to be selected by the Society.

After considerable discussion the motion was laid on the table.

The Society then adjourned *sine die.*

E. P. FRASER, M. D.,
Permanent Secretary.

Meeting of the Executive Board.

Pursuant to call, the Board convened at the office of the Secretary, June 13, 1884.

Members present: G. M. Wells, M. D., R. Glisan, M. D., and Kenneth A. J. Mackenzie, M. D.

Owing to the absence of the Chairman, Dr. G. M. Wells was elected Chairman pro tem, and the meeting called to order at 4 o'clock P. M.

The following circular from the Nebraska State Medical Society was presented to the Board. The resolutions were adopted and the President of the Society authorized to appoint a member of the Society to carry out the provisions of the circular.

"The Committee on Foreign Correspondence shall consist of one duly accredited representative (a member of this Society) for each State and Territorial Medical Society. They shall receive and review the transactions of the Societies which they represent, and through their chairman, the Corresponding Secretary, present annually a report of the advances in Medicine made by said Societies. They shall also report such other matters as their Societies may wish to communicate to the Oregon State Medical Society.

"DUTIES OF REPRESENTATIVES OF FOREIGN SOCIETIES.

"It shall be the duty of the representative of any Foreign Society to communicate all advances in matters medical and governmental made by said Society in the year just past, as well as all matters of whatever kind his Society may wish to

be brought to the notice of the Oregon State Medical Society, to the Corresponding Secretary of the Society, as chairman of the committee. And, finally, the representative shall guard, to the best of his ability, the interests of his Society, where and whensoever it is demanded."

"CREDENTIALS OF REPRESENTATIVES.

"Representatives shall hold their credentials, duly signed by the President and Secretary of the Society to whom they stand accredited; which credentials shall be forfeited whenever the representative fails to comply with the requirements of his office."

The President appointed James Browne, M. D., LL.D., in accordance with the above.

In the matter of Dr. J. E. Kirkpatrick, the Secretary was instructed to inform him that charges has been preferred against him for unprofessional conduct, and to communicate his reply to the Board.

The bill for an act to regulate the practice of medicine, which was read before the Society, after careful consideration, was approved by the Board.

The Secretary's financial report was examined and approved.

The Board then proceeded to pass upon the various papers read before the Society, with reference to their publication.

The following were ordered printed as read:

Paper by William Jones, M. D.
" " J. W. Givens, M. D.
" " Otto S. Binswanger, M. D.
" " F. B. Eaton, M. D.
" " Holt C. Wilson, M. D.
" " W. H. Watkins, M. D.,

And the valedictory address by W. H. Saylor, M. D.

The following members were appointed to prepare papers for special consideration at the next annual meeting of the Society, with their respective subjects:

G. C. Lane, M. D., Sprains.

R. A. Urquhart, M. D., Urethral Strictures.

A. D. Bevan, M. D., Radical Cure of Hernia.

C. C. Strong, M. D., Leucorrhoea.

E. P. Fraser, M. D., Colds.

O. S. Binswanger, M. D., Scrofula.

Meeting adjourned to meet at the call of the President.

E. P. FRASER, M. D.,
Secretary.

REPORT OF A CASE OF LATERAL LITHOTOMY FOR VESICAL CALCULUS.

BY WILLIAM JONES, M. D.

Edward F———, aged nine years, residence Washington Territory, entered St. Vincent's Hospital about May 26, 1883, with the following history: He lived formerly in Nebraska, where, five years before he commenced to be troubled with frequent and painful micturition. A year afterward he moved with his parents to Washington Territory, where he has since resided. His urinary troubles continued and increased in severity from their commencement up to the time he came under my observation. But a meager history of his case could be obtained from his parents, who were ignorant people, nor from himself. He seemed little more than half-witted. At the time he entered the hospital he was weak and emaciated from long suffering and being broken of his rest, by frequent desire to urinate. He suffered continual pain and had lost all control over his bladder; his urine escaped in jets or dribbled from him, keeping his clothing continually drenched. He had lost all sense of decency—evacuted his bowels in bed or in his clothes, and was in every way a most disgusting creature. He walked in a very peculiar manner—keeping his right leg crossed in front of the left, grasping his penis with one hand and pressing the finger of the other firmly against the rectum, he hobbled forward in that way. On examination I found his bladder distended with water that he could not pass, and his prepuce long and inflamed. I attempted to pass a catheter, but could not succeed, even when

he was under the influence of chloroform, on account of spasm of the urethra. While making the attempt to pass the catheter, the urine would escape in jets by the side of the instrument. The next day I circumcised him, and while he was under the influence of chloroform succeeded in passing a metalic catheter and with it discovered a stone in the bladder. The circumcision wound healed on first intention. On June 4th, assisted by Drs. H. E. Jones and Banks, I performed a lateral lithotomy and extracted a calculus weighing five and a half drams. It was partially encysted, being firmly attached to the bladder near the neck. It resisted all efforts at extraction until loosened from its attachments by the finger, when it was removed without difficulty. The hemorrhage was slight and the operation was completed without accident. Next day the evening temperature was 103. There was considerable tympanitis and occasional colicky pains and persistent vomiting. Two days after the operation vomiting ceased and fever subsided. A few days later typhoid fever set in and ran its usual course, lasting several weeks. Convalescence was slow as was also the healing of the wound. He left the hospital in September in fair condition, the wound having nearly closed, only a small portion of the urine escaping that way.

The great rarity of urinary calculus in the northwest, makes this case of interest. So far as I can learn this is the first time lateral lithotomy has been performed in this state, and the first case of calculus of any considerable size that has occurred in this section. From the history of this stone it would seem that it is not entirely a product of this part of the country, that it had commenced to form at least a year before he left Nebraska. Another point of interest is, that the calculus was not lying loose in the bladder, but was firmly attached

to its wall near the neck. This was not discovered till during the operation, when the stone was seized by the forceps and traction was made. It could not be brought into the incision by moderate force and the cause of resistance, on introducing the finger into the bladder, was found to be this attachment.

If it be true, as has been supposed, that stone in the bladder does not form here, yet because of the number of immigrants that are coming from all parts of the world, we ought to meet cases occasionally that are brought here, as was this one, from other places, and in making out a diagnosis in diseases of the bladder it will be necessary to admit the possibility of stone and be on the lookout to discover it where it does exist.

HEADACHES.

BY J. W. GIVENS, M. D.

Headache is a consciousness of a painful condition of the brain cells or the sensory nerves of the head, the intricate nature of which is so mysterious and depends upon so many causes acting on and through the nerves and brain cells, that a thorough treatment of the subject is impossible. Nevertheless, a study of this condition is of great practical importance to the physician.

In the first place, we would like to know the exact condition of the nerve necessary to give the impression of pain; we also wish to ascertain *all* the causes which can give rise to this peculiar condition, and, most important of all, we want

to know how to best relieve the pain occasioned by this condition.

We may ask how and wherein is the nerve different when giving us the impression of pain, from what it is when giving us the impression of pleasure ?

Is it in the addition of something to the nerve, or a subtraction of something from, the nerve, and if so, what is this something ?

Or is it a change in the relations of the elements composing its structure, or is it something else ?

I think I am uttering the truth when I say that no one has yet demonstrated any necessary material change, or changes in the nerves or brain cells to which the painful impression is due. This is one of the many places where the absolutism of the physician must stop short of answering the question, and we must resort to a supposition that the necessary condition of a painful nerve is one wherein there is a change in the vital force acting through the nerve, caused by abnormal changes in the surroundings of the nerve and not necessarily to any material change in the nerve itself.

Now, what is the change in the vital force ?

We do not know just what the vital force is, we only know some of its phenomena. Neither do we know what change there is in this vital force. There may be an addition of another and altogether different dynamical force acting through the nerve to cause pain, therefore the essential pathology of pain is unknown to us.

There is no necessary anatomical or morphological change in the nerve itself, and as we do not know what the change in the vital force is, or what the new force may be, we must

look for a relative and tangible pathology of headache not in the nerve itself, but in its environments.

This leads us directly to our second question—what causes headache ?

In a rather crude and far-off way, it may be said that the causes of headache are,

First, abnormalities of the blood of the head.

Second, lesions of the various structures of the head.

Third, inherent abnormal tendencies of the vital force and dynamical forces acting upon the nerves and brain cells, as —shock, heat, cold, electrical disturbances, etc.

Fourth, reflex irritations or a combination of these causes.

Concerning the abnormalities of the blood of the head, they are either of quantity or quality.

HYPERAEMIC HEADACHE.

The quantity of the blood in the brain varies in health as the brain is active or in a state of rest. This variation in quantity is provided for by the presence of the peri-vascular spaces which surround the blood vessels and are filled with the cerebro-spinal fluid. As the blood vessels are filled this fluid drops back into the spinal canal and is also probably absorbed ; while as the quantity of blood in the head diminishes and the blood vessels contract, any vacuum is prevented by these peri-vascular spaces becoming filled with the cerebro-spinal fluid.

This increase or decrease in the quantity of blood in the head, may extend in either direction beyond physiological limits and result in headache.

Whether hyperaemia causes headache by pressure on the nerves of sensation, or by over-distension of vaso-motor nerves,

which are slightly sensory, or in some other way, is not known.

The brain is no exception to the rule that the activity of an organ will increase its blood supply. Now, if this activity be carried beyond physiological limits, hyperaemia will certainly result, and when this is the cause the obvious indication is to lessen the amount of brain work.

The work of the brain is to receive and register impressions, and afterwards to combine these impressions into thoughts, opinions, etc. To entirely stop this work is impossible, but wherever there is hyperaemia, the work of the brain should be reduced to the minimum. This can only be done by a thorough knowledge of the patient and his surroundings.

In considering this condition I think excessive worry will generally be found to constitute a more important element in the trouble than excessive overwork.

It is usually not the acknowledged bankrupt that has hyperaemia, but the man who is dreading the publicity of bankruptcy yet to come; nor is the open and known violater of the law the hyperaemic, but the one who is dreading the shame of exposure; it is not the disappointed politician, but the one who fears disappointment; not the medical student who has failed to pass a satisfactory examination, but the one who alternately hopes he will succeed and fears he will fail, who suffer from hyperaemia. And in all these conditions of brain excitement it will be seen that it is the element of uncertainty with which the mind wrestles, but never comes to a conclusion, that keep the brain cells in an uproar.

Now these patients should as soon as possible come out upon solid ground. It is far better for the merchant to go

into bankruptcy, settle his accounts and have no concealments from his friends and associates, so that his blood vessels will be relieved and his brain cells quieted down, than to worry along distracted by pain and perhaps be led to insanity or suicide.

Let the politician accept his defeat and the mind will immediately begin, and usually succeeds in accommodating itself to its new condition, which will generally be found not so intolerable as was feared.

The patient who finds that his condition of expectancy develops headache, must make up his mind to forego ambition and deal, as nearly as possible with certainties only, leaving schemes and speculations to his more fortunate brother, who has strong, elastic cerebral blood vessels that can contract and keep the amount of blood in the head down to the proper limit.

If the cause of worry is one that will grow less with time, the headache may be relieved for the time being by bromide of potassium.

Compressing the carotids will also diminish the amount of blood in the head. This, of course, can only be done temporarily.

Plenty of sleep must be secured. The hot foot bath to divert the blood to other parts of the body, must be kept up. Brisk cathartics are often indicated and generally have good effect. For this purpose an occasional dose of sulphate of magnesia is probably as good an agent as any other.

Blisters to the back of the neck are usually helpful in hyperaemic headache.

If the headache is due to systemic plethora, the lancet should be resorted to if necessary, the amount of food be reduced, a free action of the bowels kept up by more active exercise and with cathartics.

If the hyperaemia is due to hypertrophy of the heart, tincture of aconite and veratrum in sufficient doses to lower the heart's action and lessen the arterial tension, should be prescribed. A belladonna plaster worn over the præcordia will sometimes quiet the turbulent heart.

In cerebral hyperaemia, due to worry and overwork of the brain, there is often systemic anæmia, and tonics and chalybeates are called for, but if they are administered alone they will frequently aggravate the headache.

Now, the hyperæsthetic brain cells and nerves may be rendered tolerant of an improved condition of the blood by the administration of bromide of potassium, which is probably the best agent we have to allay hyperaesthesia of the brain cells. But it should always be borne in mind that it usually impairs digestion and if continued in large doses will lessen the normal activity of the brain. It is therefore productive of evil and must be dispensed with as soon as possible.

When the blood vessels have been so far taxed and distended that their elasticity is greatly impaired, they are so filled with blood, by gravity when the patient lies down, as to cause headache.

This condition is to be relieved by lying with the hands extended above the head, elevating the head, compressing the carotids, and, in some cases, only by the patient sitting up all the time, even during sleep, until the normal tone of the blood vessels is restored.

To this end the brain work must be reduced as much as possible.

F. E. ergot, in good sized doses, must be given with the view of contracting the blood vessels and keeping them contracted.

The headache of a common cold, which is probably due to hyperaemia of the brain and a general toxaemia of waste

products remaining in the blood, will usually be relieved by hot air baths with very small doses of tartar emetic with stimulants, as, ammonia, quinia in large doses and alcoholic drinks accompanied by mild laxatives.

HEADACHE OF ANAEMIA.

In anaemic headache the aim is to increase the amount of blood in the head. With this end in view the whole quantity of blood in the body, as well as that in the brain, must be increased.

To improve and increase the whole quantity in the body, good food, plenty of exercise, and sleep and rest must be insisted upon. No medicine can properly take the place of these naturally appointed means for man's healthy and painless existence. Healthy blood, and in normal quantities, is not of medicine or medicines. It is true they may be of benefit by assisting to healthy digestion—supplying something not in the food—promoting elimination or by an alterative effect, but the patient should not be required to make a chemical laboratory of his stomach because he has an anaemic headache.

Healthy blood must come, in the main, from proper food and drink, and suitable exercise.

Aneamic patients flourish upon the same principles of treatment which a thrifty farmer applies to his horse.

As medicines, iron and quinia, are, of course, the standbys. The former is rarely continued long enough to produce the best effect. The old idea that iron increased the stamina and vitality of the patient, probably contains its grain of truth

I have found the least gastric trouble resulting from the use of iron, when given two or three hours after meals.

Fowler's Solution and Cod Liver Oil, are useful, the latter especially so in the anaemic headaches of children.

If the cerebral anaemia is due to a weak heart, assuming

the recumbent position will do the double work of filling the brain with blood and diminishing the heart's work.

It should be remembered that the only time when any blood goes into the tissues of the heart to build it up, is during its diastole.

In the recumbent position the heart's beats are lowered several times per minute, and it is the diastole, not the systole that is prolonged, thus giving the heart a longer time to take in and assimilate its food. Digitalis also tends to make a weak heart strong by slowing its beats, thus affording it more time to take in blood.

The anaemic headache which attends great loss of blood, can often be temporarily relieved by wrapping very hot cloths around the head. Alcoholic stimulants will also often afford temporary relief. Nitrite of amyl, also, often gives speedy temporary relief. Replenishing the blood as soon as possible will afford the only permanent relief.

Digestion should be sound and all abnormal drains upon the system should be corrected.

There are many pathological lesions causing anaemia, each of which must receive the necessary attention.

TOXAEMIC HEADACHE.

The changes in the quality of the blood that may cause headache, are, the presence of the poisons of syphilis, specific fevers, retained biliary secretions and excretions, kidney and skin excretions, rheumatism, lithiasis, and possibly that mysterious something called malaria. Several of these are not unfrequently operating at the same time.

It would be very interesting to know just how these poisons affect the sensory apparatus to cause pain, but the change wrought by them in the nerves is not known.

When they are the cause of pain, indications for treatment are two—

First—to protect the nerves against their influence ; and,

Second—to get rid of them as soon as possible.

To protect nerves against irritants of all kinds, the preparations of opium are first, while for the relief of pain this agent stands pre-eminently above all known medicines.

But while opium will protect the nerves against the influence of these irritating poisons in the blood, it unfortunately generally interferes with elimination, and thus perpetuates the cause of the headache. This objectionable property is removed to some extent, by combining with it atropia.

The quantity and frequency of its administration should be only sufficient to relieve the pain.

The early attention of the physician should be engaged in getting rid of these poisons. The poisons of syphilis requires preparations of mercury and iodides. The headache of the essential fevers is due to the increased heat as well as to the presence of the poison. Since no antidote has yet been found for the poison of the specific fevers, we must strive to protect the nervous system against the poison and the increased temperature.

Opium will relieve the pain.

Cold sponging or cold baths will control the temperature.

In addition to these, food of easy digestibility should be given in small quantities and at short intervals, that the work of digestion and elimination may be as small as possible.

Time alone will exhaust the poisons.

The headache of retained biliary products are relieved by the administration of the old standby—calomel and jalap.

Notwithstanding the demonstrations of experiments that calomel does not increase the action of the liver, it relieves the disagreeable symptoms of the patient, whatever may be its modus operandi. Chloride of ammonia is also useful. Strych-

nia is supposed to protect the nerves against the depressing effects of retained biliary secretions.

The food and habits must be so changed, if possible, that these products do not accumulate in the blood.

Recent writers think these accumulations largely due to excessive consumption of nitrogenous food.

Cathartics will generally afford temporary relief, but they can not change the habits of life which cause the trouble. If the patient is not willing to make the necessary change in his food and habits, he must submit to an occasional thorough rasping of his alimentary canal with nauseating drugs to get rid of the offending matter.

The headache of retained excretions, due to constipation of the bowels is a very common one, and the physician who most thoroughly works the field of constipation will relieve the greatest number of headaches.

The causes of and remedies for constipation cover too large a field for discussion here, but, like headache, it is always due to a cause or causes, as, improper food, want of exercise, disturbance of nerve forces, etc. The cause must be found, if possible, and remedied. In the meantime the patient should have an alvine evacuation every day, by medicine, if necessary.

In the headache of retained renal secretion, opium will render the nervous system in a great degree, tolerant of the presence of the poisons, while we strive to eliminate them by diuretics, cathartics, etc.

The salts of lithium serve an admirable purpose by rendering soluble those particles of waste in the blood which are to be eliminated by the kidneys. Hot baths are useful and a free action of the skin may be promoted by clothing the patient warmly and maintaining a high temperature.

The headache of rheumatism should be treated with alkalies

and salicylates of sodium, with opium for the immediate relief of pain.

The headache of gout demands colchicum and low diet.

The headache of malaria is relieved by quinia, Fowler's solution, and such a building up of the health with tonics, good food, and plenty of sleep, as to make it proof against the effects of malaria. All depressing influences which can lower the vitality must be avoided.

The headache of lithiasis is due to conditions of the blood and tissues, which are imperfectly understood. Relief is generally obtained by the administration of alkalies and laxatives, with a diet chiefly of vegetables and fruit.

Many theories have been advanced to explain the phenomena of what is usually called sick headache. Some believe it to be a disease of the nervous system—something like epilepsy ; others believe it to be due to hyperaemia of the brain ; others to diseases of digestion, and others to a toxaemia of waste products gradually accumulating in the blood until the nervous system rebels.

There may be some truth in all of these theories. The one that regards it as due to an accumulation of waste products, will probably lead the physician to the most satisfactory results in treatment.

In any case of sick headache a thorough emetic will not do harm, and in many cases will afford relief. A good cleaning out of the alimentary canal with improved compound cathartic pills, will usually mitigate and shorten the attack. Of course any other cathartic will do the same. The patient will generally get through the attack with the least pain by going to bed, or at least by abstaining from all active exercise, either physical or mental.

The agents that are supposed to exert such an alterative action on the system as to make it proof against the attacks of

sick headache, are very numerous. Oxide of zinc, arsenic, and iodide of potassium, will frequently be found of service.

Let the patient adopt such habits of eating, drinking and exercising in the intervals of the attacks, as experience teaches him, will keep him in the best physical health, and if he can not keep them off altogether, he will reduce their frequency to the minimum. Yet, notwithstanding the best approved hygienic rules and medical treatment, he must occasionally suffer their recurrence. He may be assured, however, that the attacks will not shorten his life, or materially diminish his ability for work or enjoyment, in the intervals free from the attacks.

STRUCTURAL HEADACHES

Lesions of the various structures of the head that cause headache, are, inflammations, neuralgia, tumors, tubercles, gummata, etc.

Inflammation of the membranes requires active cathartics—bromide of potassium, chloral hydrate, large doses of fluid extract of ergot and dry cold to the head with the ice cap. Absolute rest, with the exclusion of all irritants of the sensorium, must be obtained.

Neuralgia requires the exclusion of any local lesion, and then quinine and iron, Fowler's solution, morphia, and atropia, for its immediate relief.

Tumors, which may be suspected if there be persistent headache accompanied by a choked optic disk and vomiting, will sometimes yield to iodide of potassium in large doses. Opium should be given for the immediate relief of the pain. Syphilitic gummata may be known by the history, by motor and sensory disturbances and by choked optic disk. It generally recovers when the system is overwhelmed with iodide of potassium in large doses—two or three hundred grains daily.

Opium will afford temporary relief of tubercular headache. Nothing is curative.

DYNAMICAL HEADACHE.

The headache due to dynamical disturbances is generally difficult to treat. The nervous system is usually so ill balanced that very small things seem to disturb its equilibrium. The patient must be surrounded by all the elements of health possible, and learn to live according to his strength. He must sleep as much as possible, never engage in anything that will greatly tax his vital powers, in short, lead a very quiet, easy life. If he can not, or will not do this, he will, in the present knowledge of therapeutics, have to pay the penalty in headaches, nervous attacks, etc.

The medicines that prove useful in this condition, are, hyoscyamus with camphor, valeriate of ammonia, and opium, if necessary. A weak galvanic current passed through the head will sometimes relieve by improving the nutrition of the nerves.

REFLEX HEADACHE.

Reflex headaches call for two things, to wit:

First—such a change in the nerves that the lesion in a distant organ will not be felt in the nerves of the head; and,

Second—the cure of the distant lesion.

Bromide of potassium is the best agent to relieve the pain of a reflex irritation. How it does this, whether it acts upon the brain cells, or nerves, is not known.

Headaches, the causes of which are very obscure, are often due to reflex irritation. Every organ in the body should be as carefully examined as the present light of physiology and pathology will direct us.

Among the frequent reflex causes of headache, are diseased and defective teeth, diseases of the eye and defects of accommodation, nasal catarrh, diseases of the ear, dyspeptic trouble, uterine and ovarian diseases, urethral and vesical irritation,

and many others. Diseased teeth should be referred to a competent dental surgeon.

The irritation and headache caused by dentition of children, is best relieved by bromide of potassium.

Diseases of the eye require appropriate treatment. Defects of accommodation are frequent causes of headache in school children, that are often overlooked by the general practitioner. Children who complain of headache should always be examined for ocular defects.

Nasal catarrh is also a frequent cause of distracting headache, and is generally very hard to relieve, owing to the fact that the patient does not get his food, clothing and work adjusted to his requirements and abilities.

Headaches that come on after meals are often relieved by regulating the quantity of food taken at a meal and a persistent use of salicine in flour, or five grain doses with the same of bromide of potassium given after meals.

The reflex headache of uterine or ovarian diseases, is generally temporarily relieved by bromide of potassium.

All other possible causes of reflex headache, should be excluded in any given case.

Why diseases of distant organs cause headache in some and not in others, and at one period in the life of an individual and not at another, is not known. We can only suppose there is a peculiar susceptibility or neurotic basis, the exact nature of which is unknown. But it is very rare that this peculiar susceptibility is in itself sufficient to account for a headache, and by diligent search, causes and conditions that can be remedied are usually found.

THE USES OF BISMUTH IN MEDICINE.

BY O. S. BINSWANGER, M. D.

This subject has been selected more from the hope of eliciting some scientific experiments and from a desire to emphasize the doubt which exists in my mind, as well as in the opinion of some of our later writers concerning this drug, than to announce anything new.

Looking over the prescriptions in four of our larger drug-stores, I found that on an average, one out of every eight or nine prescriptions contains bismuth. Besides the preparations of cinchona bark, opium, iron, iodide of potassium, mercury, and the bromides, there is probably no drug which enjoys such general favor in the profession and is so frequently and largely used as bismuth. This fact alone seems to be sufficient cause for bringing this subject before you to-day, and for inviting your attention to it.

Bismuth was not known to the ancients; its first notice as a metal was by Agricola in the year 1529.

The only officinal preparations of bismuth are the *subnitrate* and *subcarbonate.*

The subnitrate of bismuth—bismuthyl nitrate—(Bi O) NO_3 is obtained by dissolving bismuth in nitric acid, whereby nitrate of bismuth—Bi $(NO_3)_3$—is formed. By decomposing this salt with a large quantity of water, the subnitrate, a white, heavy, faintly acid powder, is precipitated. The subnitrate is very liable to contamination with arsenic; the method followed in the preparation of the pharmaceutical product rarely excluding arsenic completely, sometimes, very imperfectly. It is also frequently contaminated with lead or

silver; sometimes it contains such an amount of free nitric acid as to effervesce when mixed with a carbonate.

The subcarbonate of bismuth — bismuthyl carbonate — $(Bi\ O)_2\ CO_3$, is a white, or yellowish white precipitate (from the formation of some sulphide or from the presence of silver), obtained by alkaline carbonates in a solution of bismuth nitrate. It is liable to the same contaminations as the subnitrate. Both preparations are insoluble in water and alcohol.

In buying preparations of bismuth, the dispensing pharmacist should be careful that he really gets a pure article. The large opposition, which wholesale drug houses produce, causes them to sell it as cheap, and consequently as impure, as possible. About eighteen months ago, I read of an examination of a sample of subnitrate of bismuth, bought from a wholesale drug house in New York, which proved to be nothing else but oxide of bismuth (70 per ct.) and sodium nitrate (30 per ct.) without any subnitrate at all, although sold under that name. It seems to have been made by precipitating a solution of nitrate of bismuth by a solution of soda, and by separating and drying the precipitate with little or no washing.

The soluble bismuth compounds, as for example, the acetate, the citrate, and ammonia bismuth, have an intensely poisonous action, which resembles that of arsenic and antimony, in that it causes fatty degeneration of internal organs and disappearance of glycogen from the liver. These compounds, however, are not officinal and are not used therapeutically.

Besides these, there are a great number of trade preparations containing bismuth and calisaya, bismuth and pepsin, bismuth and strychnia, etc., but they are all—like most preparations of this kind—more elegant than useful, and are unscientific and unreliable.

Bismuth, as a therapeutical agent, is used *internally* and *externally.*

Internally, the preparations of bismuth are used for the following diseases:

In *acute indigestion* it is said to allay the irritability of the mucous membrane, if given after the contents of the stomach are fully evacuated; also in cases of *painful digestion where there is a tendency to diarrhœa*, the inclination for stool coming on soon after the food has been taken.

In *gastralgia*, arising from a state of irritation of the gastric mucous membrane, also in *sub-acute* and *chronic gastritis.*

In *gastric pains of overworked, ill-nourished and deteriorated individuals*, when these are accompanied by a certain irritability of the stomach, so that eating is followed by pain and vomiting, without other symptoms of gastric catarrh being present.

In gastric ulcer—In this trouble, as well as in many others where our first object is to relieve pain, produced by irritation of nerve endings, it is customary to combine with bismuth, opium or some of its derivatives. A formula very often used for this purpose, is the following:

℞

Bismuthi subnitras.....dr. ii.
Morphiae sulphas.....gr. i. M.
Ft. chart., No. vi.
S: one powder three times a day in milk,

Or, in cases where, from any cause morphia is inadmissible, hydrocyanic acid may be given in its place:

℞

Bismuthi subnitras.....dr. ii.
Acidi hydrocyanici dil.....dr. ss.
Mucilag. acaciae.
Aquae menthae pip. āā.....oz. ii. M.
S: a tablespoonful three times daily.

English physicians are fond of prescribing in cases of this nature, subnitrate of bismuth, in doses of ten to twenty grains, with five to ten grains of compound powder of kino, every six to eight hours.

In *gastric pain of hysterical subjects*—Combined with charcoal carbonate of magnesia, bismuth very often affords speedy relief.

℞

Bismuthi subnitras.....dr. vi.
Magnesii carbonas.....dr. i.
Carbo. ligni. pulv.....dr. iss M.
Ft. chart. No. xii.
S: one powder every three hours.

In *vomiting of pregnancy, vomiting of teething children, acidity and pyrosis*, excellent results are sometimes obtained from bismuth and carbolic acid.

℞

Bismuthi subnitras.....dr. iii.
Acidi. carbolici.....gr. iv.
Mucilag. acaciae.....oz. i.
Aquae menthae pip.....oz. iii, M.
S: a tablespoonful for adults, three times daily; for children, a proportionate quantity.

In *night sweats of phthisis*—Mr. Rudolfi has found the use of subnitrate of bismuth, associated with bicarbonate of sodium and sulphur, to be very efficient in controlling this exceedingly distressing symptom.

7–8 gr. of the bicarbonate of soda,
2–3 gr. of the sub-nitrate of bismuth,
2–3 gr. of sulphur.
S: every two to three hours.

In cardialgia—which accompanies diseases of other organs.

Its principal use finds bismuth in disorders of the bowels, followed by diarrhœa, as,

In *typhoid fever*—Here large doses have to be given—one half drachm, or one drachm every three to four hours, either alone or combined with opium, or some of its alkaloids, and with carbolic acid.

In *cholera infantum*—For this purpose, numerous combinations are employed, as, pepsin when the disorders appear to depend on the condition known as apepsia, the discharges containing masses of undigested caseine; rhubarb, when the symptoms are produced by undigested aliment, or when the stools are white and pasty; soda, chalk or oxide of zinc, when the stools are acid and excoriate the buttocks. A formula which is very often prescribed, especially in our eastern states, is the following:

℞

Bismuthi subnitras.....dr. i–ii.
Pepsinae sacch.....dr. ss.
Zinci oxidi.....gr. vi–xii. M.
Ft. chart No. xii.
S: one powder every four hours.

In *cholera morbus.*—After giving a hypodermic injection of morphia, a mixture of bismuth and carbolic acid, quickly relieves all purging and vomiting.

In *cholera asiatica.*—Bismuth was highly approved by Leo, in the epidemic at Warsaw, in 1831, and in later epidemics at Paris, it was commended by Trousseau and very largely used for the premonitory diarrhœa. At the commencement of the attack only, a little opium may be added with advantage, afterwards, two full doses of bismuth daily will suffice.

In *chronic diarrhœa*, or *diarrhœa of phthisis.*—Large doses of bismuth have to be given for this purpose, and then it not only

restrains the intestinal discharges, but it improves the appetite and digestion.

In *dysentery*.—Mr. Brassac, of the French naval service, records the best results from bismuth in epidemic dysentery. Finding little or no benefit from small doses, he began with 230 to 300 grs. daily, and increased it to more than 1,000 grs. It is also used in *dysmenorrhœa* or *menorrhagia*.—Phillips found it strikingly efficacious, especially for the latter trouble, when recognized styptics had failed.

Less often, but still, occasionally, bismuth is prescribed for *coryza chronica*, *epilepsy*, *chorea*, and *intermittent fever*, and that by men of very high professional reputation, as Sorbrier, Richter, Loebenstein, Loebel, Frank, Konigsdorfer, Henke, Urban, Schroeder, and van der Kolt.

Even for *whooping cough*, *palpitation of the heart*, and *haemoptysis*, bismuth has been given, and it is said with good result.

Externally, the preparations of bismuth are used for the following diseases:

In *erythema and interigo*.—In these congestive and inflammatory skin diseases, bismuth compounds are often extremely useful. They may be applied in powder alone, or diluted with starch or magnesia, or made into a cream with water and glycerin, or into an ointment, such as—

Bismuthi subnitras .....dr. i.
Adipis.....oz. i. M.
S: use locally.

In *eczema*, especially in the acute stage, when there is much irritability and much serous discharge, bismuth, either as powder or as ointment, will be very useful.

In *acne rosacea*—For this purpose bismuth forms a good ingredient in soothing lotions:

℞

Bismuthi subnitras.....dr. v.
Hydrargyri chloridi corros.....gr. iv.
Aquae.....oz. viii.
S: locally.

In *chaps, fissures of the hand, lips* and *nipples*—An ointment of bismuth, tincture of benzoin and lard, gives relief, and effects cure.

In the *aphthae* of children, *nursing sore mouth*, the milder cases of *mercurial salivation*, and of those painful ulcers of the mucous membrane of the mouth, due to disorders of digestion, bismuth applied freely to the affected parts, is often very serviceable, by diminishing the pain and promoting the healing process.

In *chronic gonorrhœa* or *gleet*—An injection of subnitrate of bismuth, mucilage and water will stop or reduce the discharge.

In *leucorrhœa* and *excoriations of the cervix uteri*—Bismuth is applied for this trouble in powder or paste, on charpie, or as injection, in the proportion of 1 to 8 of water.

In *nasal catarrh* and *coryza*—As a snuff, or insufflated, bismuth has been found very useful in reducing the discharge.

In *chronic conjunctivitis* and *granular lids*—A glycerole, containing two parts of the subnitrate to three parts of glycerin, has been used and recommended by Follin.

In *balanitis* and in *chancroids*—A mixture of equal parts of calomel and subnitrate of bismuth, dusted over the inflamed surface, often dries up the discharge and quickly relieves all unpleasant symptoms.

Bismuth subnitrate is also used as a *cosmetic*—as which it receives the names Pearl White, Pearl Powder, Blanc de Fard, and Blanc d'Espagne. It is apt to become grey in tint,

and even brown or black, when sulphuretted hydrogen, often evolved from sewers, cesspools and drains, comes in contact with it.

Also as *dressing for wounds*—Kocher, of Bern (Volkmann's Sammlung Klinischer Vortraege, No. 224), appears as an advocate of subnitrate of bismuth as an antiseptic wound dressing. He claims, by experiments, to have established its germicide powers. He irrigates the wound with a one per cent. mixture of bismuth in water. The gauze, bandages, etc., are wrung out in a ten per cent. mixture of the drug. Bismuth paste is also used over superficial wounds, and along the line of incision.

Finally, bismuth is used for the *detection of sugar in urine.* Urine, supposed to contain glucose, is heated with a mixture of subnitrate of bismuth and carbonate of soda. In this white liquid thus formed, there is soon seen a black precipitate of oxide of bismuth, or elementary bismuth. Boettger's test, which is much in use in this country, is practiced in the following manner: A few cubic centimetres of the urine are mixed in a test tube, with an equal volume of sodium carbonate (one part crystallized carbonate and three parts water), a few granules of bismuth subnitrate are added, and the mixture boiled for some time. If sugar be present the bismuth turns brown or black by reduction to elementary bismuth.

Thus we have seen that bismuth is employed for a great number of internal and external diseases. The questions which naturally now arise are: Is bismuth deserving of all the credit which it receives in these maladies, and is it, from a scientific point of view, to be expected that bismuth exerts a curative power in all the diseases just mentioned ?

In order to answer these questions it is necessary to study the physiological actions of the officinal bismuth preparations.

The subnitrate and the subcarbonate, as I have mentioned already, are insoluble in water and alcohol, and only very *slightly* soluble in the juices of the stomach. It is now well known that a given quantity of subnitrate or subcarbonate of bismuth, administered by the mouth, leaves the body, with the faeces, without loss, because it is unabsorbable. The only positively determined effects are the black color which it imparts to the faeces by the formation of bismuth-sulphide, and constipation in consequence of the dryness of the faeces. Bismuth-sulphide is insoluble in dilute acids and alkaline sulphides.

I am well aware that some medical writers are opposed to this opinion, and only six months ago I noticed an article in the Boston *Medical and Surgical Journal* (Vol. ix, No. 14, page 315), entitled "On certain unrecognized forms of lead poisoning, and on the possibility of mistaking bismuth for lead in urine analysis, by James I. Putnam, M. D." In this article, Dr. Putnam thinks, to have the presence of bismuth in the urine, after taking the drug, proven. He took a quantity of the subnitrate of bismuth, varying from 30 to 40 grs. daily, for two weeks. At the end of this time, while still taking the drug, his urine (about two quarts) was examined by Mr. Perkins, according to the method habitually used in the lead analysis, and a final reaction was obtained, which was practically identical with that observed when lead is present. That lead was not present, however, had been shown by a preliminary examination of the urine, which had been prepared for by taking iodide of potassium in the dose of 15 grs. daily, for several days. About twenty-four days after ceasing to take bismuth, he again took iodide of potassium and collected two quarts more of urine during the next two days. This was analyzed and a trace of bismuth was again found to be present. It is necessary here to state, that the final test used for

lead depends, namely, on the formation of the yellow iodide of that metal, after the addition of iodide of potassium. But the same reagent produces also yellow iodide of bismuth, if a compound of the latter metal be present.

Dr. Putnam now thinks to have all sources of error eliminated, simply by proving that there was no lead in his system before taking the bismuth salt, and, therefore, the yellow precipitate found by addition of iodide of potassium *must* be due to bismuth. But if we consider that he experimented with the common subnitrate of bismuth sold in drug stores, which, as we know for certain, very often is contaminated with lead, and if we consider, too, that pure bismuth salts, in other experiments, have been proven in the faeces in the same quantity as administered by the mouth, is it then not more than likely that his final reaction was, in spite of his partial precaution, due to the presence of lead in the subnitrate of bismuth?

There is, of course, a method to separate lead from bismuth, but the quantities found in urine are so small that it is decidedly difficult, and the most reliable way to avoid the error of taking lead for bismuth is to experiment with a subnitrate of bismuth, obtained from the perfectly pure metal, precipitated and well washed.

Even what has been said and written about the so-called bismuth breath, is, by closer inspection, no argument in favor of the absorbability of bismuth by the system. When preparations of bismuth are given, a moderately close observation and a good sense of smell will detect a garlicky odor in the breath in perhaps as many as one case in ten, and in one case in a hundred the odor will be so marked as to attract attention in some distance from the patient. One time this bismuth breath has been attributed to arsenic or antimony, with which it is very frequently contaminated, but careful examin-

ations of some samples of bismuth which produced this effect, failed to detect either arsenic or antimony. In the year 1853, in Liebig's Annalen (vol. LXXXVI., page 208), is a very full and interesting record of such garlicky odor from tellurium. Even very small doses of a tellurium preparation, which have been given by Hansen, by the way of experiment, to man and animal, produced this odor in a very marked degree. But tellurium was sought for in vain in bismuth salts, which gave the garlicky breath in some cases. Hence the experiments of Hansen do not help much in finding the cause of the bismuth breath, unless tellurium was present in the bismuth salt, but escaped detection. Possibly the question of tellurium in bismuth salts needs a more accurate and careful re-examination.

It can not be denied that cases are on record where toxic effects have been produced by the administration of bismuth. Orfila and Meyer, in experiments on animals, found that the subnitrate, in doses of 1 to 2 drachms, caused vomiting, tremor, depression and death, with post-mortem evidence of gastro-enteritis (Toxicologie II, page 10.) Kerner also records a case of a man who took 40 grains of the subnitrate and suffered from gastric oppression and burning pain, bitter taste, loss of appetite, eructation, griping, bilious vomiting and relaxation, with vertigo, dimness of sight and headache. Sobernheim subjoins to these cases one, that, after 2 drachm doses, proved fatal in nine days—besides the symptoms just mentioned, inflammation and gangrene of the stomach and intestines were found. Other similar cases are described by Pott, Traill, and others.

But of what value can all these recorded cases be, when we place on the other hand the daily experience of a majority of practitioners and the strong evidence of Trousseau and Monneret? Trousseau states that during a very extensive use of

the *well prepared* subnitrate, in doses of from 15 to 60 grains, he has never seen the slightest accident, or the least cause of apprehension; while Monneret prescribed the enormous doses of 150 up 900 grains per diem, without any inconvenience resulting. All the toxic symptoms above mentioned, doubtless, are due to contaminations, such as arsenic, lead, silver, nitric acid, etc., etc., and all the good or evil which the subnitrate and the subcarbonate did, in cases where the utility was dependent *upon their supposed absorption*, must be due to these contaminations.

The mere fact that we can not explain its utility in epilepsy, intermittent fever, cardialgia, and some kinds of dyspepsia, etc., would be of little importance, for the same objection holds good for many drugs which experience has shown to be extremely valuable. But why should we attribute these effects to bismuth when we know its officinal preparations are not absorbed;—when we know that these preparations are very seldom free from contaminations of arsenic, lead, silver, nitric acid and nitrate of soda? Why should we in such cases give the credit to bismuth, when, as in all cases is done, the diet is strictly regulated, and in nineteen cases out of twenty other drugs, such as opium, morphium, charcoal, pepsin, magnesia, strychnia, carbolic acid, etc., are combined with it? Why should we adhere to such antiquated opinions when men like Nothnagel, Leube, and Rossbach, who never use bismuth in diseases where its absorption is necessary to its effect, have, nevertheless, excellent therapeutic results without it. The fact that it has been used for a great number of years with imaginary benefit, is of very little moment, for the history of the science of materia medica shows what little weight can be attached to this fact. Venesection, indiscriminate purging with blue pills or calomel, wrapping fever patients in piles of blankets and depriving them of water, are, happily, things of the past. And only half a generation ago these measures were

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considered absolutely necessary to effect a cure. In science we have no dogmas to maintain, and we are true to a theory or hypothesis only so long as the facts substantiate it.

While I do not mean to go as far as Rossbach and Nothnagel, who deny bismuth a place in our materia medica, I am convinced that this drug is very often prescribed where absolutely no good effect can be expected from it, simply because of its inabsorbability. While I am satisfied that *pure* subnitrate or subcarbonate are entirely useless in whooping cough, chorea, epilepsy, intermittent fever, nightsweats of phthisis, coryza, palpitation of the heart, dysmenorrhœa, menorrhagia, gastric pains of hysterical subjects, certain kinds of dyspepsia, which are due to a defective secretion of the gastric juice, acidity, pyrosis, and gastric pain of overworked, ill-nourished and deteriorated individuals, I am equally satisfied that bismuth, as internal medicine, is extremely useful in such diseases where its effect is purely a local one. Its action is then explained on the supposition that it forms a protective layer over the surface of an ulcer, or over an irritated or inflammed mucous membrane, thereby diminishing the irritability of the exposed, sensitive nerve ends. It is therefore a medicine of the highest value in cases of painful digestion, where there is a tendency to diarrhœa, the inclination for stool coming on soon after the food has been taken, also in gastric ulcer and in most diarrhœal diseases.

For external use I consider bismuth a very valuable drug in the diseases mentioned under that heading, by virtue of its absorbent and soothing properties, but for many I would prefer other medicines, which, as experience has shown, are far more effective and trustworthy. As a germicide bismuth is, according to late experiments, a useful addition to our already existing list of known and approved antiseptics, but it certainly is

inferior to carbolic acid, iodoform and corrosive sublimate. For the detection of sugar in urine, bismuth may give rise to errors, for there may be some substance present, which, by giving up sulphur, may cause the formation of black bismuth sulphide. Therefore this test is inferior to those which have for their basis the cupro—alkaline liquors.

It is true in all those diseases for which I dispute the usefulness of bismuth, it very seldom has done any harm directly, but I am sure it very often has done so indirectly—by relying upon its supposed efficacy, by expecting good results where we are not justified, and by failing to use other medicines whose therapeutic actions are above any doubt or suspicion. We owe it to our patients, we owe it to our profession, and we owe it to ourselves in prescribing for diseases, to make use, in the first place, of such medicines whose value and effects are based on scientific principles, and only, if these have not proven sufficient, to use in the second place such remedies whose effects are empirical and whose physiological actions are not yet understood. I, therefore, would advise to use our officinal bismuth preparations only in such cases where the utility is based on their local effect, and to abandon them in all cases where a constitutional effect is expected.

DISEASES OF THE JOINTS.

BY HOLT C. WILSON, M. D.

The subject of diseases of the joints, as a whole, to be treated of fully and minutely, would be too extensive for discussion before the Society at this time. I, therefore, have limited this article to certain forms of Synovitis and arthritis, together with anchylosis and its treatment, without going deeply into the pathology of these affections, but confining our attention more especially to the symptoms, course, and most approved treatment of the same. It occurred to me, then, in thinking over the subject, that it would be best to select simple Sero and Suppuratives Synovitis, as illustrating ordinary and characteristic joint affections—Strumous Synovitis, or White Swelling, (Gelatenoid Arthritis) a not uncommon form of Strumous joint disease; and, lastly, Morbus Coxae, or Hip disease, a special, very important and comparatively frequent malady. Other forms of disease peculiar to joints, I will not touch upon, as being perhaps less common in the practice of our surgeons and therefore of not so great practical interest. There is one point which a surgeon will sooner or later notice, as his experience increases in the treatment of joint diseases, namely: That individuals with certain characteristics of temperament and constitution, are always prone to joint inflammations; and others exposed to same influences, traumatic or otherwise, will escape. For instance, take two men, both apparently healthy. Let the knee of each be struck by the same instrument, in the same spot and with the same force. One will have nothing more than a soreness, lasting, as a bruise, for two or three days; the other will have a severe Sero, or later, perhaps, Suppurative Synovitis, possibly crip-

pling the joint. Such a peculiarity would seem to be hereditary.

Simple Sero Synovitis is usually of traumatic origin. It may result from a slight blow, a wrench, or, in fact, anything causing disturbance in the joint. Is caused also by exposure, or may occur unexplainedly—characterized by swelling, pain, chiefly in motion, increased heat, with or without redness, fluctuation, giving distinct evidence of presence of thin fluid with no inflammatory induration or oedema. Later, muscular contracture, which is at first spasmodic, constitutional symptoms present to a greater or less extent, according to severity of joint disturbance.

Treatment: Complete rest, position, application of evaporating lotions, best of all, dry cold by means of ice bags, no moist heat, very hot water good, but too difficult of application. If tension is very marked, great relief is afforded by aspiration. Fluid seldom forms again in considerable quantity, pain at once relieved or removed. Later, firm bandaging after acute symptoms have subsided, of no benefit in beginning and can not be borne; doucheing with cold water and occasionally with hot, will now be of marked benefit in most cases and often relieves remaining inflammation. Have no faith in application of tincture of Iodine as absorbent. After first application can not pass through the skin. Possibly now and then of slight benefit as an irritant. Blisters applied above and below the joint may be of service. Danger of strangury to be thought of and guarded against.

Suppurative Synovitis may occur grafted upon the simple variety. It occurs when the joint is wounded, as in compound fractures—usually much more serious, joint usefulness nearly always impaired to greater or less extent, depending upon extent of inflammation and whether destructive in its action.

Symptoms differ from Serous Synovitis in presence of redness, inflammatory induration and oedema, muscular con-

tracture and starting pains more marked, and greater constitutional disturbance. Later, evidence of pus formation (abscess), all symptoms then aggravated. Treatment at first as in Synovitis Simplex. When seen that pus must form, apply moist heat in form of poultices, renew them every three hours; if much tension exists, relieve by free incision antiseptically, irrigate joint with antiseptic solution twice a day, perhaps oftener. Use preferably, hydrarg. bichlorid, 1:2000. Place joint at complete rest by use of fixed apparatus. In knee or hip, extension usually also necessary. Where suppuration only threatening, symptoms sub-acute, Trousseau's cataplasm (to be described later), is an excellent application. Passive motion at proper time to avoid anchylosis. Strumuous Synovitis, White Swelling, or Gelatenoid Arthritis of some authors—as name indicates—is of strumon origin, is sometimes traceable to slight injury as exciting cause. Most common seat, knee, elbow and hip; occasionally in ankle joint, and very seldom in the shoulder. Cause of disease varies from partial implication of joint structures to total destruction of same, with exhaustive suppuration tending to lardaceous degeneration of internal organs and death. Symptoms: First, appears even, smooth, white swelling above, below and around the joint; at first little or no pain, without heat or redness, no œdema, no fluctuation, structures have a boggy, characteristic feel; at first slight starting pains, with muscular contracture. Later, more marked, extremely painful and severe, more or less flexion in some joints. If pus now begins to work towards the surface, it finds its way between the tissues, and the skin at thinner parts, becomes purplish in hue, more softened and may break in one or more places, discharging unhealthy looking pus, mixed with material formed of broken down joint structures, disease advances to ulceration of cartilages, thence to the bones, and we now find that the ends of the bones can be moved upon each other, eliciting crepitus, and the parts

seem to be loose. In some cases where there is great distension and pressure, a tendency exists to partial or even complete dislocation. If now the disease does not take a favorable turn, the patient becomes more and more exhausted by loss of rest, confinement, extensive suppuration, depression of vitality from absorption of pus, tendency present to amyloid degeneration of the liver, spleen and kidneys, and the sufferer finally dies from these causes and exhaustion. When, on the other hand, resolution is to take place, at some stage of the disease it will be noticed that the symptoms, instead of becoming more aggravated, remain for a time the same, and then a gradual amelioration and slow resolution takes place. Disease usually occurs in children under twelve years of age, though occasionally in adults. Prognosis should be always guarded, will be guided somewhat by amount of struma, and the general appearance and temperament of the individual.

Treatment, both constitutional and local: Cod liver oil, malt preparations and syrup of iodide of iron in anaemic badly nourished subjects and proper tonics in other cases of not very marked Strumous diathesis. Locally, would recommend the application, in most all stages, of Trousseau's cataplasm, which is made as follows: Take three or four pounds of bread, according to the size of the joint, say four pounds for the knee, and two for the wrist, cut into pieces, removing hard portions of the crust, soak them for about one quarter of an hour in water; take out, tie in a cloth, squeeze out as much of the water as you can conveniently, put then in a steam bath and allow it to remain three hours when it becomes like dry paste. Soften with tincture of camphor and knead for about five minutes, till of consistency of plum pudding. Do not make it too soft, or it will be pressed out; nor too hard, or it will crumble. Some little nicety is required in the mixing. The dough thus prepared must be spread on a linen or cotton bandage, rectangular in shape and large enough to

cover the joint, spreading well above and below. The material should be about one-third of an inch thick at the edges, in order to prevent the thinner portions from drying too quickly. The surface of the cataplasm is then painted with the following liquid mixture: Camphor, seven grammes (105 grs.), ext. op., five grammes (75 grs.), ext. bellad., five grammes (75 grs.), alcohol q. s. Paint the joint with the liquid as well. Now apply the dressing to the parts and envelop with a non-evaporant covering. Fix the whole firmly by means of a flannel bandage, over which place a cotton or linen one, stitch folds of bandage to prevent slipping. Joint thus arranged should remain perfectly immovable, and after eight, ten or twelve days, on removal, the dressing will be found to be as moist as when applied, and sweet and free from mould. The skin will be perfectly healthy, unless cataplasm was made too thin. The swelling, in most cases, will have subsided, owing to pressure and character of dressing. Advantages, compression, even temperature, avoidance of motion, and continued effect of anodyne application. Authorities recommend blistering, cauterization and absorbents, which are all of doubtful benefit. After resolution has taken place, sometimes before this, careful passive motion should be applied, very little at first, the effect watched, and then increased gradually until all motions of the joint are obtained.

Morbus Coxae, or Hip Joint disease, is a malady which prevails in all countries, varying in its course and severity in accordance with diathesis of subject attacked. It usually is more severe in Great Britain and on the continent of Europe, and consequently more difficult to bring to a favorable termination, on account of greater prevalence of struma, and the impoverished and badily nourished condition of the lower classes. At any rate, American surgeons seem to be more successful in its treatment. It is important to recognize this disease at the outset. It must not be mistaken for malarial or

other forms of rheumatism, nor for sprains or bruises. When called to a child who limps slightly, perhaps complaining of no pain, the limping having existed for some time, a surgeon should at once suspect Hip Joint disease, and though there be no marked symptoms, the diagnosis should be guarded and the case watched. Disease usually occurs in children from two to fourteen years of age, frequently traumatic, occasionally strumous and ordinarily in strumous subjects. Symptoms are divided into three stages. Disease may arise in acetabulum, or head of femur. First stage—limping, at first very slight and intermittent, worse at times than others, temporarily improved by rest. Pain at first occasional; later, more constant, usually referred to knee, sometimes to neighborhood of hip joint, or to both places; cause of pain in the knee probably due to obturator nerve and sympathy between bone ends, (Barwell). When the surgeon is inclined to think the knee the seat of the disease, examine carefully and make firm pressure with the hand over the joint. If disease is there, pain will be increased, otherwise, rather relieved. The examination should be made with patient placed on a table, flat on the back. Place the legs together and the pelvis square. Seize now the limb on the well side and move in all directions, observing the free play of the joint and *no motion* in the pelvis. The same being then done on the diseased side, it will be noticed that when moved in certain directions the pelvis moves with the femur, as in partial anchylosis, perhaps causing no pain. Even striking the heel sharply will cause no discomfort, but it is a barbarous thing to do in the latter stages, when it would cause great suffering. The fixity of the pelvis is due, in the main, to muscular contraction.

Second stage—abduction (apparent lengthening) gradually supervenes. Patient, when examined in erect posture, can not place the feet together flat with limbs straight. Will either bend the knee on affected side, or rise on toe of opposite

side ; pelvis seems to be twisted obliquely, buttock flattened, muscles of thigh also wasted. In recumbent posture, when attempt is made to place both knees flat on the table, pelvis on affected side will be arched; and pelvis being flat, knee will be raised. This is a very characteristic symptom. Swelling also occurs in the second stage from effusion, apparent sometimes below the groin on front of thigh, tissues in groin rendered tense, swelling also behind trochanters, often marked, sometimes only distinguishable by careful palpation. Examine Iliac Fossa by carefully and slowly pushing aside the structures just within the pelvis, gradually working the fingers down to point sought and outline the swelling if present. Starting pains now become more frequent and growing more and more severe, are forerunners of approach of third stage—that of shortening (apparent) or stage of adduction. Position of limb now changed from abduction to adduction. Pelvis more arched, knee bent when patient is erect, and buttock protruded on account of flexion. Suppuration may now take place, especially when there has been a considerable amount of fluid formed, or there may be resolution. When suppuration occurs abscess may point on front of thigh, or posteriorly, or near the joint; sinuses form, starting pains are very great, dislocation may occur, giving temporary relief, exhaustive suppuration in bad cases, caries, necrosis, and death from exhaustion. Prognosis guarded, cases treated early usually recover; careful treatment generally successful even in later stage.

Treatment: It is not often that a surgeon is called to treat these cases in the early stages, unless the parents are nervous and watchful of their children. I have seen cases where, even attention to lameness would be first called by neighbors, and even then frequently parents content themselves with applications of linaments and home remedies. Other cases advance rapidly and the three stages run into each other. The surgeon

himself might be deceived in slow cases, but rest in bed, possibly with extension, can do no harm. If the diagnosis can be made, rest with extension, is imperative. Extension should be made according to the manner of Buck, which, with the indulgence of the members, I will describe in detail, as, to prove effective it must be rightly applied: Procure stout adhesive plaster, cut a strip about two inches wide and long enough to pass from say two or three inches above the knee, (above so that there will not be much strain on the knee joint) down the leg and around and fasten to a foot piece of thin board, of the thickness of the side of a cigar box and of the breadth of the plaster, and from one quarter to one half an inch wider than the distance through the ankle from malleolus to malleolus, that there be no chafing of same by the plaster; then up the leg on the other side to point opposite starting point on thigh. Plaster of each side should be slit into three strips of equal width down to within say one and a half inches of the foot piece. Attach to foot piece a stout cord (sash rope) passed through a hole made at its middle and held by a knot. To this rope is to be attached the weight, varying from five to ten pounds, made conveniently of a bag of shot or piece of iron and as small as possible. The plaster is applied to the limb after heating on cloth side by means of a spirit lamp, the three strips being interlaced around the leg and thigh, the middle strip of each side going straight up, the lower passes underneath and thus around the limb, and the upper passing forward. This is the important feature of the application. If applied as one strip as is usually done, it will slip; if applied as above and supplemented by two or three circular strips one half inch wide, will never slip. An assistant should hold the foot piece perfectly parallel with sole of foot and about two inches from it, seeing that it does not sag to the one side or the other. Thus there need never be any objection raised to Buck's extension on this score. The

plastered limb should then be neatly bandaged with a two inch flannel roller, from foot to middle of the thigh, the malleoli being guarded by pads of cotton batting. A pulley is attached to the foot of the bed over which the rope plays, care being taken that it is so arranged that the weight rides free, or the friction will diminish its power. Counter extension is made by raising the foot of the bed to any required height. Begin with light extension, gradually increasing to amount required. The limb may be steadied by long splints, (care being taken that it does not interfere with extension), or with Volkmann's apparatus. In cases of threatened suppuration, evaporating lotions may be applied. Extension gives ease by drawing head femur from acetabulum and gradually overcoming muscular spasm. Children fret at first at the restraint, but become reconciled in a few days. Resolution may now take place or abscesses may form, which may be treated by aspiration, using large needle, or by incision. Secure free drainage and early, to avoid burrowing. After acute symptoms have subsided and muscular contracture is wholly or in part overcome, by all means apply some form of fixed apparatus—Sayre's, Taylor's, etc., and let the patient be about. The apparatus can be exchanged for extension at night, or worn continually, if possible. Most cases get well at any intermediate stage. Some grow steadily worse in spite of any treatment. Unremitting, exhaustive suppuration, long continued, is an indication for excision, an operation which we have not space to discuss. I do not approve of spica bandage of plaster of paris, except to give rest to the limb. Extension can not be kept up at the hip joint by this means. Indications for treatment of Hip Joint disease are then in short, rest of body and of joint by extension, proper constitutional remedies, plenty of fresh air, and good nourishment.

In all these diseases of joints there is no primary tendency to ulceration of cartilage or of bone. The disease begins in

the joint proper—ulceration of cartilage, and later of bone, takes place from the presence of fluids and spread of inflammation. Anchylosis is a term used to signify stiffness or fixity of joints, and is either true or false. True, when there is union between ends of bones, and false when simple adhesions have formed, or when ligaments and neighboring tendons have shortened. Bony anchylosis can not be broken up to advantage. Certain cases of false anchylosis are relieved by subcutaneous division of tendons, and adhesions are broken up by forced flexion or rotation—patient anæsthetized, amount of force safe to use to be decided by the surgeon. When resistance is very firm and unyielding to gradually increased force, desist, when yielding, pursue carefully until the end desired is reached. Considerable fresh effusion often caused, which soon subsides with treatment. Use careful passive motion daily to prevent fresh adhesions. Anchylosis often prevented by this when carefully applied.

CELLULITIS AND PERIOSTITIS OF THE ORBIT AS SEQUELS OF OTHER MORBID CONDITIONS, WITH CASES.

BY F. B. EATON, M. D., PORTLAND, OREGON.

In accordance with the design of former papers which I have read before this Society, I have chosen for the subject of the present one, two diseases which should be of special interest to the general practitioner, as well as to the oculist.

Cellulitis and periostitis of the orbit are not only frequent sequels of other morbid conditions, but, during their course,

the sight is often destroyed, or both sight and the eye ball itself are lost. In order to understand some of the points of diagnosis set forth in my cases, it will be useful to consider a few of the anatomical relations of the orbit to other portions of the cranium. For instance, it is important to consider the sphenoidal fissure (*foramen lacerum orbitale*), occupying the apex of the orbit, and the *optic foramen*, placed internal and superior so the sphenoidal fissure. I would direct especial attention to the vessels and nerves transmitted by these foramina. The sphenoidal fissure transmits the *third* (ocular motor), *fourth* (patheticus, to superior oblique muscle), and *sixth* (abducens to external rectus muscle), all cranial nerves; the *opthalmic* (sensory nerve) *branch* of *fifth cranial nerve*, and the *ophthalmic vein*. The optic foramen transmits to the *optic nerve* and the *ophthalmic artery*. It is an interesting, and, at the same time practical, question—what purpose is served by this singular separation of artery and vein, and why the optic nerve should not occupy alone, its foramen. The only branches of the ophthalmic artery requiring mention, are the *central artery of the retina*, entering the optic nerve shortly after it reaches the orbit, and the long and short *ciliary arteries*, which furnish the vascular supply to the globe.

The *ophthalmic* vein empties into the cavernous sinus.

The anatomical structure of the sheath of the optic nerve, is of practical interest. The optic nerve possesses two sheaths. One of them is a prolongation of the dura mater and passes, together with the nerve, into the orbit. During this course the external portion of the dura mater forms the periostium of the orbit; while the internal accompanies the nerve and forms its external sheath. Its internal sheath is formed by a continuation of the pia mater. The external sheath may be subdivided into an external fibrous portion, and a thin layer similar in structure to the arachnoid of the cerebrum, and has received the name of *arachnoid sheath*. The two portions are

separated by a capillary space which, near the point where the sheath becomes inserted into the sclerotic, disappears entirely. Schwalbe has demonstrated that this *subarachnoid space communicates directly with the corresponding space in the brain.* There is, therefore, no difficulty in injecting this space from the brain. In most affections of the brain and its membranes, it becomes filled with serous effusion, and if the nerve be ligated before removing the cerebrum at the *post mortem*, the distension is very apparent.

To conclude this anatomical sketch, I will remind you that the different anatomical structures of the orbit are imbedded in and bound together by a cellular adipose tissue, and this is the structure involved in the disease I am to describe.

It will be proper to sketch briefly the usual symptoms and course of cellulitis and periostitis of the orbit.

Cellulitis of the orbit, sometimes termed abscess of the orbit, is, as the word indicates, an inflammation involving particularly the cellular tissue of that region, though in severe cases the nerves, blood vessels and other structures of the orbit, are also affected.

The gravity and importance of the inflammation of this tissue in other parts of the body, is well known to all surgeons, and is none the less in the orbit.

Symptoms—The three most prominent symptoms in an acute attack, are, pain, swelling and redness of the lids, and protrusion of the eyeball, i. e. exophthalmos. In addition, the conjunctiva becomes much injected and œdematous, and may be raised as a wound around the cornea (chemosis). The pain is often excruciating, and is located in the ball, and also around it, extending over the corresponding side of the forehead. Generally there is decided febrile disturbance, and if the inflammation should extend to the brain, either along the sheaths of the optic nerve (which, as I have already stated, are prolonga-

tions of the cerebral meninges), or along the vein to the cavernous sinus, severe cerebral symptoms will ensue. Vision is often much impaired by stretching of and pressure upon the optic nerve. At the outset of the disease the protrusion of the eyeball may be so slight as only to be evident on comparison with the other eye. As the cellular inflammation increases, however, the exophthalmos becomes more and more evident, until, perhaps, the lids can not be closed over the eyeball. The *mobility* of the globe is from the first impaired, accompanying its fellow only partially in its movements. But when the inflammation has reached its height, and the cellular tissue has become a brawny mass, the globe is fixed as firmly in it, and as hard to the touch as if imbedded in plaster of Paris. In fact it has struck me, on contemplating this condition of the eyeball, how very similar it is to the rigidity of the uterus in pelvic cellulitis.

Course—The inflammation usually passes its height by the eighth or fourteenth day, and terminates with a gradual decrease of symptoms. Sometimes, but not often, it assumes a subacute or chronic course, and months may elapse before pus accumulates and the ball is pushed forward.

Prognosis—The prognosis, as to the integrity of the globe and its contents, must, in most cases be regarded as bad. Recent ophthalmic literature, however, contains the history of such a number of favorable terminations, as to indicate that cases taken in their incipiency and treated judiciously, recover, even when protrusion is marked.

Termination—According to Stellwag the process may end,

First—In resolution;

Second—If a considerable amount of pus has once formed, it almost always perforates behind the conjunctiva, or lid, and the suppuration generally lasts a long time. Occasionally a number of sinuses form which extend into the orbital tissue in

the most varied directions, and open at some distance from each other. Very frequently no pus is formed, and such cases are the most severe, because the nutrition of the eyeball is so interfered with by the compression of the infiltrated orbital tissue, that finally the whole eyeball suppurates (panophthalmitis).

Treatment—Rest in bed and simple diet, are the first requisites. The use of cold applications is now depreciated, in favor of hot fomentations from the first. If the tension is great, and the pain severe, the eye is threatened with destruction and an incision should not be delayed, *even if there be no pus to liberate*, for the dangerous pressure will thus be diminished. It is better to incise too early than too late. The incision is best made with a straight, sharp-pointed bistoury, to the depth of one inch, *beyond the bony edge of the orbit*, making allowance for the exophthalmos in entering the bistoury between the orbit and the globe, either by way of the integument, or into the conjunctiva between the lower lid and the globe. Injections into the wound for the purpose of cleansing it, are to be avoided, as the water may diffuse itself in the loose tissue and increase the inflammation. Immediately after operating, the wound should be carefully probed, in order to detect any denuded bone, especially in those cases where the cellulitis has been caused by inflammation of the bony wall, and detachment of the periosteum has probably occurred. Dr. Wecker, however, warns us to bear in mind that in young children the orbital periosteum, owing to imperfect development of the orbital vault, is in contact with the dura mater, and incautious probing may induce meningitis.

Causes—The most frequent causes of orbital cellulitis, are, injuries. It is very frequently secondary to other morbid conditions, *and to illustrate this fact* is one of the chief purposes of this paper.

Thus, *typhoid fever* is sometimes a cause, as the following cases of my own show:

CASE I. About a year ago while attending a patient at St. Vincent's Hospital, I was accosted by a young man, J. O., who requested me to examine his left eye. He stated that he was just out of bed, having passed through an attack of typhoid fever, during the course of which his eye had been very sore and painful. The pain was now gone, but the eye persistently "ran." On examining the eye I found a high grade of exophthalmos, so that the lids could not be closed over the globe, which was almost immovable. The conjunctiva was covered with granulations, and the globe was perforated and discharging a yellow matter. My diagnosis was cellulitis of the orbit in its declining stage, the inflammation having been so severe as to cause suppuration of the cornea and contents of the globe. The granulations were the result of poulticing. My treatment was simply cleansing, vaseline dressing and a pressure bandage, under which the eye gradually receded and regained its mobility. But being collapsed and continuing to discharge, I enucleated it at the patient's request.

The following case illustrates the *insidiousness* of cellulitis of the orbit occurring in the course of typhoid fever:

CASE II. On the 24th of January last, at the request of Dr. Mackenzie, of this city, I consulted with him in the case of J. A., a patient at St. Vincent's Hospital. This patient had left the hospital after an attack of typhoid fever, convalescent, but, owing to some imprudence on his part, had a relapse, and when I first saw him had a high temperature and was partially stupefied. The conjunctiva of the right eye was swollen and injected, and its secretion purulent. The lids appeared normal, but there were several small, indolent ulcers of the cornea. *There was no exophthalmos, no loss of motion and no pain.* I advised careful cleansing of the conjunctival sac and the use of a two-grain solution of eserine, also pencilling the conjunctiva of the lids with silver nitrate, gr. x to the ounce, every other day, protecting the cornea. There was improvement at once of the discharge, but the infiltration of the cornea increased and assumed a yellowish hue, while the aqueous humor became turbid, and the iris dull. On visiting him after an interval of a day or two, I found protrusion of the eyeball had suddenly set in, the lids were swollen and dusky, and the ball had lost much of its mobility—in short a typical picture of cellulitis of the orbit was presented. The eyeball itself was intensely inflamed,

the cornea had sloughed as a whole, and the ocular tension and pain were so great that I immediately divided the globe anteriorly and permitted the lens and now purulent contents to escape. At the same time I made a deep incision with a bistoury between the lower lid and the globe through the conjunctiva (to avoid a scar), deep into the orbit. No pus was formed, but the wound bled freely for some minutes. From this time his recovery was steady and uniform, and a few weeks after the now useless ball was enucleated. Ten days after I fitted this patient with an artificial eye, which he wore only a couple of hours a day, the socket being now quite healed. About a week after he came to me complaining of a puffy swelling under the orbit of the enucleated eye. As the cicatrized socket was perfectly quiet, I was obliged to search for the cause of this elsewhere. On inquiring, he stated that for several nights he had suffered with toothache in the upper jaw on the right side. On investigation I found this ache to be located in one of the right upper molars, which was promptly removed by a dentist. I saw the patient afterward, and he stated that both pain and swelling had disappeared with the removal of the offending tooth.

Carious teeth have of late been shown by competent authority to be frequent causes of orbital cellulitis, but I doubt if, without the fever, the above patient could have acquired it from the tooth trouble alone.

The following case quoted by Dr. Hermann Pagenstecher, (Archives of Ophthalmology, xiii, i), is one of many which afford proof of the influence of affections of the teeth in producing cellulitis of the orbit:

"A woman twenty-four years of age was taken with a violent toothache in the right first upper molar. The right side of the face became swollen and also painful. The eyeball was protruded and she soon noticed that she was blind on that side. The swelling pointed at first at the inner, and later at the outer canthus, and there was discharge of pus. Upon admission the face was distorted, the lids were oedematous and the skin had a livid hue. The right first upper molar was now extracted, together with several other carious teeth. The alveolar cavity of the molar was partly obliterated, and a probe introduced into it passed into the antrum. A large portion of the inner wall of the orbit was found necrosed and removed. The pupil, which had been im-

movable during the whole course of the disease, regained its mobility, but the lost eye-sight did not return."

A sudden outbreak of inflammation in an eyeball long ago injured or diseased, but now quiet, may cause orbital cellulitis. I have never seen this mentioned as a cause, but I have notes of two cases which clearly prove it. One of these I will give, omitting the other rather than lengthen out my paper:

CASE III. Thomas W. at sixteen, was brought to me by his parents on the 6th of December last. They stated that his right eye had been diseased ever since he was four years old; it then became blind without any inflammation, nor had he any pain when a child; until ten days ago it had always been the same size as the other, when, without any apparent cause, severe pain and swelling of the sight of the eye (iris)? set in. The inflammation became so severe that he had a high fever and was delirious.

Examination—I found the right eye much protruded, so that the widely stretched lids could not be closed over it. There was some slight mobility, but *the ball was painful to the touch.* There was much oedema of the conjunctiva. The globe had suppurated and collapsed. My diagnosis here was, that the original trouble was purulent irido-choroiditis, which had spread from the eye to the cellular tissue of the orbit. At my advice the boy entered the Good Samaritan Hospital, where I treated the eye with warm applications and bandaging. As the collapsed ball remained painful to the touch, thus threatening sympathetic ophthalmia, and the patient was anxious to return to work, at his desire I enucleated the diseased globe on December 12th, when the cellulitis had subsided. On examining it I found the vitreous had every appearance of tubercle and was in a caseous condition, an opinion corroborated by that of Dr. Jos. Henry, the resident surgeon.

A comparatively frequent cause of cellulitis of the orbit is *facial erysipelas.* By far the most remarkable case to illustrate this cause, is that recently reported by Dr. H. Knapp (Archives of Ophthalmology, Vol. xiii, No. i).

The remarkable feature is that the condition of the retina was studied from the first, and important anatomical facts bearing on the circulation of the orbit thus deduced.

Dr. Knapp's case—When first seen by Dr. Knapp, this patient, a man 40 years of age, had been suffering for two weeks with erysipelas of the whole face and neck. Three days before Dr. K. saw him, and while the erysipelas was rapidly subsiding, symptoms of orbital cellulitis set in, with swelling of the lids and protrusion of both eyeballs. In one day all perception of light was lost. Dr. Knapp says: "(I) found the following condition: * * * Eyeballs protruded, immovable, of normal tension and sensibility. Sight=O, both sides. *Ophthalmoscopic appearance.* Media clear. The posterior part of the fundus white like milk, the peripheral part reddish white. Optic disc and yellow spot not visible. A great many very dark red, almost black, blood vessels radiate from the common centre, the invisible optic disc, in every direction. They are very tortuous; all of them have the same color; the larger ones have twice, and in some places, three times, the calibre of the largest normal retinal veins. * * They cross one another in no place, * * and may all fairly be considered as *veins engorged with stagnant blood.* Between, and in part, upon them, are a great number of dark red, yet not black red, extravasations of blood (retinal hemorrhages). The condition of the eye was regarded as the result of a compression of the orbital blood vessels with suspension of the retinal circulation, constituting thrombosis of the retinal veins."

Future ophthalmoscopic examinations by Dr. Knapp showed the gradual development from thrombosis to atrophy of the disc and retina. This thrombosis is produced by orbital cellulitis, according to Dr. Knapp, in the following manner:

"When the infiltration of the cellular tissue reaches a certain height, the *central* retinal vessels (enclosed in optic nerves) are compressed. We may presume that the vein is compressed sooner and in a higher degree than the artery. This must lead to its dilatation, to retardation and, ultimately, to stoppage of the current of the blood and rupture of capillaries and smaller veins. When the infiltration of the orbital tissue diminishes, the pressure on the artery will likewise diminish, blood will again be thrown into the retina, and as the veins (by thrombosis) are still filled and compressed, new hemorrhages will occur by diapedesis, or rupture of the vascular walls."

I will now pass on to give a brief sketch of the nature, symptoms, course, etc., of periostitis of the orbit, and illustrate

some of its leading characteristics, with an account of a case of my own of very unusual interest.

Periostitis of the orbit may be *acute* or *chronic*. *Acute Periostitis—Symptoms:*—The most characteristic symptom is *pain*. This is always severe, and may precede all other symptoms, being located in and around the eye. The eyelids are generally, though not always, swollen and red; the conjunctiva is often injected and œdematous. There is, also, protrusion of the eyeball, sometimes to a great extent, but often to *one side*, and with this is associated partial or complete immobility of the globe. In periostitis of the anterior portion of the orbit, on passing the tip of the finger along the upper or lower edge of the orbit, we may detect a point where its pressure causes severe pain, and a distinct swelling may mark the location of the inflammation. In the course of acute periostitis, the cellular tissue generally becomes extensively inflamed, and the disease assumes a mixed type of periostitis and cellulitis.

Chronic Periostitis of the Orbit. Symptoms:—Here the inflammatory symptoms are far less pronounced, and the disease is more protracted and insidious. Pain is complained of in and around the eye, most increasing at night; it is increased by pushing the ball back into the orbit. As a rule, the suppuration is limited, and pus accumulating between the bone and periosteum, the latter is lifted from the bone, and caries and necrosis result. The disease drags slowly on, over weeks and perhaps months.

Course:—The periosteum is often swollen into tuberosities, or little nodules, which may undergo ossification, thus giving rise to exostoses. The pus may extend through a necrosed point into the cavity of the cranium, or frontal sinus.

Differential Diagnosis from Cellulitis—"Practically," says

De Wecker, "it is often very difficult to distinguish *acute* periostitis of the orbit from cellulitis. It is scarcely possible to determine accurately where the periostitis really commenced." A characteristic symptom of periostitis, especially when located in the fundus of the orbit, is the extreme tenderness of the eye when pressed backward. As a general rule, one of the walls is more particularly affected; in which case, the exophthalmos will be more marked in the direction opposed to that of the periostitis, but the mobility of the eye will be most impaired on the affected side. (De Wecker.) The swelling and discoloration of the lids are not so extreme in acute periostitis as in cellulitis, and in chronic periostitis may be entirely absent.

Causes:—A frequent cause is a penetrating wound of the orbit; also severe contusions of its edge from blows and foreign bodies lodging in the orbit. It may be secondary, the inflammation extending from the periosteum of neighboring cavities, as the frontal sinus, maxillary space, etc. Tumors may also cause it. *Chronic* periostitis is most frequently due to syphilis, and the following case will serve as an illustration, and also to illustrate the anatomical grounds for a differential diagnosis between orbital periostitis and cellulitis:

CASE IV. The patient, a U. S. seaman, aet. 37, was brought to me, on the fifth of June, 1884, by Dr. A. Bevan, of the U. S. Marine Hospital service, now stationed in this city, and to his courtesy I owe the history of the patient, and notes of treatment. Six weeks before coming under Dr. Bevan's care, the patient, without any warning, was suddenly seized with severe pain in the head above the right eye. Three days after, while steering a boat, he noticed that the sight of the eye was defective. Three days after this, the right eye became perfectly sightless. During all this time the pain in the eye and head continued, becoming so terrible as to cause nausea and vomiting, and prevent all sleep.

Fourteen years ago he had an indurated chancre, followed by secondary symptoms, the last appearing eight months ago, in the shape of an ulcerated

throat. Has had chills and neuralgia. The eyeball and lids had at no time been other than perfectly healthy.

Condition at time examined:—There was intense pain in the course of the right supraorbital nerve and in the right eyeball. The eyeball was protruded straight forward, but not excessively, while its mobility was considerably curtailed. The lids and eyeball appeared perfectly normal, but the tension of the latter was decidedly increased. The eye had lost all perception of light. He suffered pain in the dental nerves of the right side. Pressing the globe back into the orbit gently, caused intolerable pain. A careful ophthalmoscopic examination, showed the optic disc to be abnormally pale and considerably cupped, but not to the edge. The arteries were of normal appearance, but the veins were of double their usual size. The only other abnormality I detected in retina, was a haziness extending for a short distance around the disc.

Our *diagnosis* was *syphilitic periostitis of the fundus of the orbit*, probably of a gummous character. This diagnosis was founded on the following reasoning: The absence of any signs of inflammation of the lids or globe, contradicted diffuse cellulitis, as also did the absence of any signs of suppuration. The protrusion of the eyeball succeeded the attack of supraorbital neuralgia. In diffuse cellulitis, too, the globe is generally protruded during the whole course of the disease; whereas, in our case, the pain (and therefore, presumably, the inflammation) was still violent, at times, even after the exophthalmos had almost disappeared. From primary glaucoma, which was simulated by the neuralgia and increased intraocular tension, the case was distinguished by the fact that glaucoma affects the globe only; there is cupping of the disc to its margin; no exophthalmos, etc., etc. That the inflammation was located in the *fundus* of the orbit, was indicated by the fact that inflammation of the optic disc, almost always present when the inflammation is anterior, was absent. There can be no doubt that there was some cellulitis of the posterior portion of the orbit, causing the exophthalmos, but it was secondary to the periostitis.

The treatment adopted was, in accordance with the diagnosis, mainly specific, consisting of iodine combined, in solution, with potassium iodide, together with morphine and quinine, to meet the symptoms. Not the least part of the treatment was the extraction of the diseased second right upper molar, which was the cause of the dental neuralgia. The result was extremely gratifying; the globe gradually receded and regained perfect mobility, and the patient left the hospital June 10th, free from pain, and with an eye in every respect outwardly normal, vision, however, being totally lost. The history and the course of recovery indicated that, in every respect, this should be attributed to the specific treatment adopted.

Remarks.—The most interesting question in connection with this case is: How was the sight destroyed, without any signs of swelling or inflammation of the optic disc? The only rational reply I can give to this is, that the optic nerve must have been compressed tightly, by swelling of the periosteum (which, as stated above, is an expansion of its sheath) at or near its passage through the optic foramen, or inflamed by continuity at the same point. The optic nerve lesion must have been anterior to the optic commissure, or the left eye would also have shared in the visual disturbance. The congestion of the retinal veins, and normal appearance of the retinal arteries, are best explained by the secondary cellulitis, which, it is presumed, compressed the optic nerve at the point of entrance of the *central artery of the retina*, sufficiently to obstruct the circulation of its *vein*, but not the artery itself; the walls of the latter being, as pointed out by Knapp, much less compressible. Neither was this compression sufficient to cause pappilitis (choked disc).

It only remains for me to state, that in general, the treat-

ment of periostitis of the orbit closely resembles that of cellulitis, any indications for special treatment being afforded by the caries and necrosis resulting from destruction of the periosteum, which must be treated according to the general principles of surgery.

TUBERCULAR CONSUMPTION.

BY [redacted]. WM. H. WATKINS, M. D.,

Professor of Theory and Practice in the Medical Department of Willamette University.

Consumption has been recognized and described in the very earliest records of medicine, Hippocrates and Galen giving clearly descriptions of ulcerations and sloughing of lungs, and attendant symptoms. Sylvius, about 1769, first recognized that these ulcerations and cavities in the lungs were associated with and originated from nodes or tubercles. In 1700 Mangetus described tubercles found in the lungs and other organs, and compared them to millet seeds, which comparison has survived to our day. But it may be remarked that most of the older writers used the term "Tubercle" in its original signification, as a little lump of any kind. Indeed, we do the same thing now, quite often, as when we speak of the common achne of the face as tubercle. But, about the beginning of the eighteenth century the term "Tubercle" was wrested from its original signification of "a little lump," and arose to

the dignity of giving name to a Morbid Structure. The character of this special structure from the beginning of the present century, has engaged attention—given rise to wide and varied observation, to debate and discussion, and to which this day, by your invitation, I call your attention. Bayle, in 1803, with wonderful clearness and insight considering the progress of pathology at that time, declared that tubercular phthisis is a specific disease which may cause or be complicated with catarrhs and inflammatory hæmoptysis, but does not originate in them. He declares, however, that tubercles, owing to their cheesy appearance, are always opaque, simply because he did not recognize the fact which Laennec pointed out in 1819—that the translucent nodules which Bayle denominated granulations, were really true (the formative stage of) tubercles and afterward became opaque, becoming the tubercle of Bayle and producing the cheesy matter characteristic of tubercle. Laennec also taught a most important matter and a great advance—that tubercle was not always a nodule, but not unfrequently involves large, irregular patches of tissue, a condition which he termed tubercular infiltration—and aside from discussions as to the location of tubercle, this was about all that was known till the microscope was introduced to farther elucidate the subject. It is curious that the first use of this instrument tended to throw medical opinion back to the days of Bayle, and for this reason, Lebert, in 1844, found certain bodies in the cheesy matter which he deemed distinctive of tubercle, but which he does not find in the transparent granulations, and therefore came to the conclusion that the transparent granulations were not the first stage of tubercle,—

But, the next stage of microscopical examination overthrew many of the generally received opinions concerning tubercle.

You will bear in mind that up to this date, the presence of cheesy matter was deemed conclusive proof of its being tubercle, but William Addison, in 1849, proved satisfactorily that this theory was not true, and in 1882, Virchow showed that cheesy degeneration took place in the enlarged glands of scrofula, as Addison before him had proved that the deposits of pneumonia became cheesy, and not to be differentiated from the cheesy matter of tubercle. In fact, that cheesy matter, identical in appearance with the cheesy matter of tubercles, was the product of inflammation, as the breaking down and inspisation of simple pus cells. Virchow states on page 215 of his pathology, "That by inspisation inflammatory products can be converted into things called tubercles, is indubitable," that this occurs in the absorption of pleuritic effusion and the watery portions of cold abscesses; that in fact, "any exudation, by losing its watery constituents, growing thick, turbid, opaque, cheesy, might take on the appearance of tubercle." Virchow, after thus destroying the old foundations for tubercle, says: "I am of the opinion that tubercle is a granule or a knot; that this knot constitutes a new formation, and one which from its earliest formation is necessarily of a cellular nature; that it has its origin in connective tissue, and when it has reached a certain degree of development constitutes a minute knot in this tissue; that this new formation is from the outset, pitiable and prone to degeneration; that it may be vascular, but the growth of its many cells crowd upon the vessels and render them impervious; that fatty degeneration sets in early in the centre of the knot, the corpuscles begin to shrivel, the centre becomes yellow, and opaque and a yellowish spot is seen in the middle of the grey, translucent nodule or granule, thus producing the cheesy appearance, and thus Virchow makes, not the cheesy transformation, which

may, indeed, be formed from pus, or cancer, or sarcoma, but a new growth, or especial neoplasm, from connective tissue cells, the test and criterion by which we are to judge of whether it is tubercular or not. That tubercle is an "Heterolagous tissue, having a physiological type in the lymphatic glands." This view received considerable favor owing to the reputation of the distinguished author of it. But, it hardly stands the test of criticism, for it has been shown that the connective tissues in which tubercle is found, contains lymphatic structure, and this being the case, the tubercular development may be hyperplastic as well as Heteroplastic and secondary. It has been denied by investigators that tubercle had a lymphatic structure, and in this, critics are probably right. We now come to the termination merely of what the microscope had revealed to us, when experimental pathology took up the subject.

Villemain, in 1865, inoculated rabbits with tubercle, both the translucent and opaque varieties. He made an incision in the skin of the animals, in which he inserted small portions of tubercle. Upon killing the animal a month afterward, many of the internal viscera, especially the lungs, were found loaded with tubercles. Since which time his experiments have been repeated by many distinguished experimenters, and the following conclusions have been pretty well determined, and I may say, are unquestioned: That if true tubercle be introduced under the skin, into any of the serous cavities, if injected into the right side of the heart, or left side of the heart, that tubercular growths were produced in different portions of the body, varying somewhat according to the locality of introduction. Chaveau found that general tuberculosis could be produced by feeding animals with small portions of tubercle, or with muscle, milk or sputa of a tuberculous animal. The

resulting tubercles are found after inoculation, etc., in the lymphatic glands, then in the lungs, where they appear from the smallest speck to that of a hemp seed. Some transparent and firm; sometimes so far advanced as to have become cheesy at the centre. The liver, the spleen, the agminated and solitary follicles of the intestines and other parts of the body, become affected.

Now it would appear that we stand on solid ground, but other observers of unquestioned ability and high character, found that rabbits could be rendered tubercular; that these lesions could be produced by injecting under the skin matters not tubercular at all, as pieces of ground glass, pieces of cotton, pieces of cork, would set up this general tuberculosis, and finally that simple wounds would produce the same result. Thus the whole subject seemed to be adrift again. Of course various theories arose by which these facts might be explained, but I have not time to go into this now. The principal, and if so, the only one we require, is that the experimenters were mistaken and that only the inoculation of tubercular material will produce tuberculosis, but I shall refer to this hereafter.

I now call your attention to the more recent researches concerning tubercle. Prof. Klebs, in 1877, reported that he had succeeded in cultivating an organism from tuberculous material with which he was able to produce tuberculosis. He made cultivations from artificial tuberculosis in the white of an egg, or in the serum of the blood, which became turbid in two or three days from development of micrococci and short rods (these rods being in fact the tubercle bacilli) about two micro millimeters in length, these rods having active movement. Prof. Klebs, however, supposed that when he inoculated this material, it was the micrococci which produced the tuberculosis, but, as we shall see hereafter, he was mistaken, further experiment proving the bacilli the active agent. Prof. Toussainte, in 1881, cultivated from the blood

of tuberculous animals and from tubercle, an organism which he deemed a micrococus, and cultivation of this organism probuced tuberculosis when injected into an animal. Aufrict and Baumgarten both discovered rod-shaped bodies similar to those described by Klebs and Kochs Bacilli. In order to be brief I shall refer to a few experiments reported by W. Watson Cheyne. He describes the tubercle bacilli as varying somewhat in length, the longest being about $\frac{1}{7000}$ of an inch, or one-third the diameter of a blood corpuscle, rounded at the ends, presenting a somewhat beaded appearance, the number of beads in a single rod varying from four to eight. In December, 1881, the juice was squeezed from the muscle of a cow affected with tuberculosis and injected into a pig. The pig died in one hundred and forty-seven days from tuberculosis. A piece of the tuberculous material from the pig was injected into two rabbits April 7th. One of the rabbits died June 3d, and the other would have died but was killed for purposes of examination. At the seat of inoculation there was an ulcer, beneath which there were numerous tubercles, the neighboring glands were enlarged and there was extensive tuberculosis of several internal organs—the lung, indeed, an almost tuberculous mass—the kidney and spleen containing tubercular bacilli. Again and again such experiments as the above were reported with unvarying results, in producing tuberculosis. Still further a pig was fed with part of organs of a cow which had tuberculosis, and in consequence became tuberculosus. A drop of blood of this pig was put into a vessel containing an infusion of rabbit meat; a portion of this infusion was put into another infusion and thus repeated to the seventh time, (till all cheesy matters were removed) and ten drops of the seventh infusion was injected into the peritoneal cavity of a cat, which died in one hundred and nine days after, with enlarged abdominal glands and tubercles in liver, spleen and lungs. A portion of the tuberculous material from this cat, was inoculated into a rabbit and

caused tuberculosis. From the tubercles in the rabbit, a pig was inoculated and died from tuberculosis sixty-seven days afterwards. The tubercle bacilli were found in the lungs and other internal organs. Now, as to the importance of these bacilli in producing comsumption. Toussainte obtained micrococci, which are sometimes found in consumptive animals, and upon inoculating a number of animals with these micrococci, the animals remained well and tuberculosis was not developed. And here I may refer again to the views of Dr. Burdon Sanderson—that the introduction of non-tuberculous substances would cause tuberculosis. But Baumgarten inoculated all sorts of substances without, in any case, obtaining tuberculosis—organic and inorganic chemical materials, pathological formations, as, carcinoma, sarcoma, myeloid sarcoma, malignant lymphoma, leucaemic tumors (hard and soft), chancres, lupus, typhus glands, healthy and unhealthy pus, croupous and diphtheritic masses, granulation tissue, pieces of scabs, cheesy pus from man and animals, cheesy infarcts, caseous tumors, putrid material in various stages of decomposion, lower organisms, as infusoria, cocci and bacteria from septic fluids and all kinds of fungi, and in no case was tuberculosis induced, while on the other hand the inoculation of cultivated bacilli produced tuberculosis, and of a virulent character. I may say, then, that the trend of medical opinion at this time, is this: That the giant cells characteristic of the early formation of tubercle, are epithelial cells, such as we find in the several organs of the body, which have grown rapidly, owing to the stimulating effect of bacilli which have found lodgment in them. That tubercle does not contain blood vessels, but the accumulation of epithelial cells, causes pressure upon the vessels outside of them and blocks them, closes them up. This accumulation continuing, caseous degeneration sets in, and the centre of the tubercle becomes a cheesy mass. When this process is extensively diffused, soon

the cheesy masses communicate with each other and we have what the laity term quick consumption. On the other hand, when this process is slow and the accumulation of tubercular cells is not great, the granulation tissue around them may become organized into a fibrous tissue, and then we have the more chronic type, or fibroid phthisis and we have comparatively few bacilli, but some will be found in the caseous mass or on its border. Let us note a little farther. Tappenier caused dogs to inhale phthisical sputum which was sprayed into their cage for a number of days. In consequence eleven dogs became tuberculous, and what is very important, in seven cases the tuberculosis was confined to the lungs; in four cases nodules of tubercles were found in kidney or liver, or both. Now let us see if on the principles I have above described, we can explain some of the curious matters pertaining to consumption.

First—Then, when tubercular material was injected into such parts that it pased into the circulation, general tuberculosis, involving all the internal organs, was set up.

Second—When tubercular material was simply inhaled, the lungs were the parts principally affected, and mainly so because the bacilli were separated and kept from passing into the circulation by granulation and fibroid tissue. And observers state unequivocally that the tubercle bacilli can be discovered in the sputum of patients, before physical signs give any evidence whatever of the presence of tubercles, and it is stated that a fair prognosis of a case can be made by observing the comparative number of bacilli, large numbers either indicating a large quantity of cheesy material, or a large number of alveoli involved.

Dr. Charnley Smith has demonstrated the presence of tubercle bacilli in the breath of persons suffering from the tubercular consumption, by causing them to breath frequently through two thin layers of fine cotton, placed in the outer

compartment of an ordinary respirator. The inner layer of cotton becomes covered with the "Bacilli," then the cotton is converted into gun collodion, a thin layer of the collodion is properly stained and then placed under the microscope, and the bacilli are plainly brought into view.

As we regard these facts, we must view the question of the contagiousness of tubercular consumption. If, with Creighton and Klebs, we regard tuberculosis as derived from a morbific agent, the bacilli derived from without and by some means introduced into the system, we simply accept the theories so fully believed in southern Europe, and which at various times has received the endorsement of some great names in medicine that consumption is contagious. Such statistics as we have on this subject seem to indicate that in married life, when the liability to infection would be most pronounced, there is very little danger that consumption would be conveyed from the invalid wife to the husband, but the danger to the wife from infection by the husband, was considerable. Thus Dr. Herman Weber states that of sixty-eight persons, male and female, with more or less consumptive taint have married healthy persons, of these sixty-eight persons thirty-nine were husbands, twenty-nine wives. Only one of the husbands of the twenty-nine wives became diseased, while nine wives of the thirty-nine husbands became affected with consumption. These nine husbands lost eighteen wives. One lost four, one lost three, four others lost two each, only one each.

What are are we to do with such a case as this? A young man who had lost his mother, two brothers and a sister by consumption, and had twice bleeding from the lungs, married at the age of 27, being apparently well. His first wife was perfectly well and came of a healthy family. She died of consumption after a third confinement. The second wife,

healthy at time of marriage, died, in a little over a year, of galloping consumption. Next he married an exceptionally healthy woman, aged 25, and during her second pregnancy, she developed consumption and died in eight months. He then, with a courage not even equalled by the patriot who was willing to sacrifice all his wife's relatives, married a girl, aged 23, who was perfectly healthy, and come of a healthy family. After her first confinement, she developed consumption and died, having tubercles in lungs and liver, spleen and intestines. This man gave unequivocal evidence of disease of the lungs, but it was probably held in abeyance by his calling as a sailor; but being laid up by a fracture, the tubercular tendency became active, and he died of consumption in less than two years after the fracture.

In Dr. Webber's second case, where three wives of a consumptive husband died from tuberculosis, the disease occurred during pregnancy, or soon after delivery. Many such cases are reported.

Out of 51 such marriages, 18 wives became affected;—on the other hand, out of 29 cases where the wife was consumptive only one husband became affected. It may seem, from the above reports, that these women became infected through impregnation; but it is quite probable—now that we are learning that tuberculosis is an infective disease—that impregnation furnished the conditions—the fever, the exaltation of condition, so conducive to the reception and activity of infective diseases—precisely as we know that woman, during the period of pregnancy, is not only prone to take readily such a disease as scarlet fever, but is more than probable it will prove fatal.

In 1874, a man in Syra, Greece, was dying slowly from dry gangrene of left toe, owing to obliteration of the femoral artery. Three medical men of the town inoculated, upon the upper part of right leg, the sputa of a consumptive patient,

having previously examined his lungs and found them every-way healthy. Three weeks after the inoculation there were signs of tubercles in the lungs, and on the 38th day the patient died from the gangrene. On *post mortem* examination of the lungs seventeen small tubercles were found at apex of right lung, two at apex of left lung, and two on the surface of the liver.

Gerlach states that oxen can be diseased by introducing tubercular substances with food into the stomach, or if an animal is fed with milk from a tuberculous animal. As bearing on this subject, will be found, in the report of agriculture for 1883 (page 62), the statement that where large herds of cows are kept, in or near our great cities, that if tuberculosis is once introduced among them, the disease spreads with great rapidity, attacking nearly all the cows exposed. In one stable, kept clean, comfortable, well ventilated, and where the cows spent most of the time on the pastures, twenty-four of the thirty-one animals were plainly affected with this disease. How are we to account for this, unless tuberculosis is infectious? And the Commissioner of Agriculture says, "It seems to me that there is not a shadow of a doubt that this is an inoculable and contagious disease, due to specific virus."

But I must close, interesting as the field is, which opens before us, but again calling your attention to the fact that tubercle now does not find its central idea, its idea of unification, in the opacity of Bayle; nor the translucent nodules of Laennec; nor in Caseation, nor in the heterolagous tissue of Virchow; nor in the giant cells, or even in the micrococci, but in the bacilli. That so far as we are now able to determine, the bacilli is first, and all the rest but a sequence.

The bacilli is the great fact, the parasite of tuberculosis. That tuberculosis is produced by the conveyance of this parasite from one body to another, or one person to another, and in no other way, and following as a sequence that consump-

tion is a contagious disease. I do not say this is absolutely proved, but the presumption is great. The questions of hygiene—the prophylaxis of the consumption room, the marriage of consumptives, the necessity of protecting ourselves from tuberculous meats, milk, the necessity in all tubercular affections, as tuberculosis of the eye, testes, of the bones, etc., of resorting to immediate extirpation, are wide, varied and of vast importance. When we consider that two-sevenths of the human race are doomed to sickness and death from tubercular disease, we can hardly overestimate the importance of the view presented, if, as now appears more than probable, the observations of the future shall prove these views tenable.

THE RELATIONS THAT EXIST BETWEEN PHYSICIANS AND DRUGGISTS.

W. H. SAYLOR, M. D.

ADDRESS BY THE RETIRING PRESIDENT.

To the Officers and Members of the Oregon State Medical Society:

Another year has passed since last we assembled, and it becomes my duty upon this occasion, as President of the Society, to deliver an address upon some medical topic. On looking over the vast field of medical literature and the many able addresses by those who have preceded me in this office, I feel at a loss to know what subject to even attempt to write upon. I have, however, selected the above subject, viz.: "The relations that exist between physicians and druggists," and trust I may be able to say something worthy your attention and

future consideration. I shall not attempt an oratorical display, but, in as few words as possible, express my views and limited experience.

The intimate, and I may say, at times confidential, relations existing between physician and druggist, demand first, that harmony should exist and a due regard paid at all times to the rights of each in his chosen vocation. A want of confidence naturally leads to dissension and ultimately to the severing of business relations. Confidence is inspired in each by a thorough understanding of the art of prescription writing on the part of the physician, and an equally thorough knowledge of materia medica and the dispensing of drugs by the apothecary, as a lack of such knowledge is rarely detected by either party. To be able to write a prescription correctly in every particular, is an accomplishment well worthy the ambition of every physician. I think I may say without fear of contradiction, that an understanding of the Latin language sufficient to write a prescription correctly, is not possessed by a large number of physicians who have graduated within the past ten or fifteen years. Students are admitted and graduated in many of our medical colleges without any knowledge of the Latin language whatever. Therefore, it is almost an impossibility for one thus prepared to write a prescription correctly. It is with pleasure, however, that we see that a higher standard of medical education, with a more severe preliminary examination, is being insisted upon by the profession at large and adopted by nearly all medical colleges.

A Latin maxim by Asclepiades—"Curare cito tuto, et jucanda"—to cure quickly, safely and pleasantly, is advice which, if adhered to, contains all the information necessary to writing a prescription. According to the above rule, a typical prescription should contain, first, a basis to cure or relieve the patient; second, an adjuvant to assist or accelerate its action; third, a corrigent—a substance calculated to modify o

correct any undesirable or injurious effect of the basis, and fourth and last, but not least in importance, an excipient—a material that will give such form and consistence to the prescription as to make it pleasant, or, in all events, not disagreeable.

I am convinced that a large share of the patronage obtained by the homeopathists is due, not to their skill in diagnosis and treatment of diseases, but to their inert and tasteless so-called medicines, and this is especially the case among the more wealthy classes, whose every whim is gratified, even to the taking of tasteless medicines. It is also due to the fatal error of many of our regular physicians who do not give a thought as to the nauseating taste of many of their prescriptions. This evil on the part of the profession, can, to a great extent, be obviated by a little care and attention. A more thorough or intimate knowledge of materia medica should be instituted by many of our practitioners, and every means possible should be taken to disguise and render palatable the more bitter and otherwise disagreeable medicines. The many devices in this direction, instituted by enterprising physicians and druggists of late years, should receive our attention. Capsules, cachets and the many forms of elixirs, render many disagreeable medicines palatable. The *appearance* of a prescription after having been dispensed, also has its effect upon an intelligent patient. The ominous words that are often seen on a prescription bottle, viz: "To be shaken before taken," always suggest to my mind a slight shaking of the patient after being taken. Such a label should never be allowed on a prescription. Mixtures of this description, in nine cases out of ten, are the result of incompatibles, and if they do not form a new and different compound from the one intended, they form a worthless and inert mass. "Shotgun" prescriptions are usually of this class—from eight to a dozen different ingredients written undoubtedly on the principle that if one does not have the desired effect the other will.

One unaccustomed to the compounding of prescriptions would be surprised at the large number of recipes that are presented daily at one of our first-class drug stores that are scarcely intelligible. A part is written in Latin with the wrong terminations. A part is written in English, and a part that simply has to be guessed at. Another class, written correctly but in such a miserable chirography that they are, with great difficulty, read at all. The writing of a prescription should be so plain and distinct that not a word or symbol can possibly be mistaken for another. Every letter ought to be well defined. Another evil that it might be well enough to mention in this connection, is that of excessive prescription writing. This is indulged in by some physicians to an extent that patients with limited means are driven to desperation. It is not unfrequently the case that a patient suffering from a simple ailment, is given three or four prescriptions, costing, when dispensed, a corresponding number of dollars—every imaginable ache or pain receiving due attention by a prescription. Thus, if a poor patient should have the misfortune to be ill a couple of months, his drug bill would be beyond redemption.

Other physicians have the faculty of calling on their patients twice, or thrice a day in any and all cases, and invariably find something that requires a prescription. The poor should receive aid and sympathy, both in kind and considerate attention, and a due regard for their finances. Costly and expensive appliances should be dispensed with as much as possible, and every means taken to lighten the burdens of those who, in time of affliction are not provided with the comforts and necessities of life.

Another practice that has possibly escaped the attention of many physicians, is that of writing at night prescriptions for capsules or mixtures that require great care and time to dispense. This practice should be discouraged. The long hours

usually required of a drug clerk—from seven or eight A. M. to ten or eleven P. M—are sufficient to tax his strength and endurance. To add to this two or three night calls, with prescriptions of the above class, is an injustice on the part of the physician. Prescriptions written at night should be as simple and as easily dispensed as possible, consistent with the nature and character of the disease.

I desire now to call the attention of the profession to a few of the unpleasant features of the drug trade.

The pernicious habit indulged in by a large number of druggists—that of prescribing for many of the minor and some of the more serious diseases—should be discountenanced by the profession. It is an innovation that should not be tolerated. Its evil effect is not only felt by the profession in a pecuniary point of view, but its disastrous consequences are mourned by an honest and confiding people who suffer from ill-timed and injudicious treatment. A respectable druggist who desires and solicits the patronage of the profession, should use every means to induce his patrons who require medical treatment, to employ a competent physician. "Earthquake," "Lightning neuralgia cures," "Dead shot on rheumatism," and a dozen other compounds prescribed by some of our local druggists may at times have the desired effect of relieving the patient for the time being, but the disastrous results of such powerful drugs administered in large doses, produce serious and in many cases, lasting effects.

The colossal fortunes that are amassed by many of the present day, by the manufacture and sale of the usually villainous compounds known as patent medicines, have induced many otherwise respectable druggists, and also a few physicians, to engage in this questionable enterprise. The entire suppression of this traffic is a problem that will take years to solve. If, however, the profession would combine, as they have in many of the eastern cities, and patronize pharmacies

that dispense pure drugs and discourage the sale of patent medicines, it would have, in my estimation, a very salutary effect. It might decrease the number of drugstores, but make them eminently more respectable.

The enormous quantities of patent medicines that are consumed by unsuspecting individuals, is simply appalling. Some years ago I was consulted by a lady for uterine trouble, who informed me that she had taken fourteen bottles of "Graffenberg's uterine catholicum," without any apparent beneficial result. A short time ago a lady called at my office who said she was suffering from Bright's disease of the kidneys. She had taken several kinds of patent medicines, among which were thirteen bottles of "Kidney Tea," and six or seven bottles of liver pills. Examination revealed an irritable caruncle of the urethra. Imagine for a moment the constant use of diuretics for five or six months, for the above local disorder! Comment is unnecessary. Extortion. Every business man is entitled to a reasonable and just profit on his labor and capital invested. Some vocations are, however, more remunerative than others with the same or like amount of capital and enterprise. The profits arising from the sale and dispensing of drugs when conducted properly, are equal, if not in advance of many others. In fact, a liberal percentage is always conceded in the dispensing of medicines. A limit, however, should be attained within the domain of reason and the financial capacity of the customer. An instance of a local character was related to me a short time ago by a prominent physician. He had written three prescriptions for a patient who desired to have them dispensed. He called at the nearest drugstore and after being informed that six dollars was the price for dispensing them, he visited the second who, rather more considerate than the first, charged him four dollars and a half; thinking, however, the charges exorbitant, he called at the third whose charges, to his dismay, were

five dollars. A fourth establishment was found which dispensed the perscription for three dollars and seven-five cents. Now, gentlemen, there is something radically wrong. Either the last named druggist used inferior drugs, or the three former ones desired to fleece the patient out of from seventy-five cents to two dollars and a quarter beyond a reasonable and just profit.

I might say that cases of the above character are isolated and do not apply to a large number of respectable druggists doing business in this city.

Another evil that can not be too strongly condemned is that of *substituting*, which is practiced by a few unprincipled druggists. For instance: Cinchona, a cheap and inferior drug, is dispensed for quinia. The Sulphates for the Acetates, and vice versa. Such disreputable practices are not only dishonorable but, at times, injurious to patients and seriously reflect on the good name of an upright physician, for in the practice of medicine the physician's standing in the community is governed by his success, and that success depends largely upon the remedial qualities of medicines employed.

Commissions. I have been informed on good authority that certain druggists in this city (as well as in other cities in the state) who are supposed to be doing a legitimate business, are giving a percentage, ranging from twenty-five to fifty per cent., to a few unscrupulous physicians. As proof of the above assertions, their prescriptions are written in signs and symbols known only to certain druggists. Their prescriptions usually call for a six, eight or twelve ounce mixture, tablespoonful at a dose. By this means a larger amount can be extorted from those who are unfortunate enough to patronize them. Words fail to express the contempt for such nefarious transactions.

Mistakes are at times unavoidable, both by physicians and druggists. I do not think there is a physician of any considerable experience, who can say he never made a mistake in

writing a prescription. Such mistakes are, however, due to the hurry and anxiety attendant upon a busy professional life, and are generally of such a character as to be readily detected by a competent druggist; while on the other hand, errors made by apothecaries are seldom corrected and are liable to be of a very serious character—producing untold pain and possibly death—hence a thorough training in a school of pharmacy is indispensable to a druggist.

In conclusion, gentlemen, let us hope that the time is not far distant when every druggist intrusted with the responsible position of dispensing medicine will be a graduate in pharmacy. In fact, legislation to that effect has been secured in a large number of eastern states, with the happiest results, and it is to be hoped that in the near future the profession will insist upon legislation of like character in our own state and adjoining territories, and I would advise that some action be taken at this session of our Society with that end in view.

Washington territory at her last session of legislature passed a law governing the practice of medicine that has had a telling effect upon quackery.

Why not Oregon ?

REPORT OF COMMITTEE

ON

OBITUARIES.

WILLIAM A. HOWELL.

1850. 1883.

Dr. Wm. A. Howell, of Colfax, W. T., died June 5th, 1883, of typhoid fever.

Dr. Howell was born in Jasper county, Iowa, in 1850, and crossed the "Plains" to Oregon in 1863. He attended lectures in Starling Medical College, Ohio, and also in the Medical Department of Willamette University, from which latter college he received his degree.

He was married in 1875 to Miss Housley.

Dr. Howell was an earnest member of the medical profession and a worthy citizen of the community in which he lived.

W. D. COX.

1839. 1883.

Dr. W. D. Cox died at Sheridan, Yamhill county, Oregon, December 13th, 1883, aged 45 years.

He was born at Wilmington, Illinois, on the 12th January, 1839.

He came to Oregon in 1847. He first studied dentistry with Dr. J. G. Glenn, of Portland, and was for some time engaged in the practice of that profession with his preceptor. He studied and graduated in Pharmacy at the Medical Department of the Willamette University in 1875, and took the degree of M. D. at the same institution in the following year. He commenced to practice medicine in McMinnville, Oregon, and moved to Sheridan in the spring of 1877.

Dr. Cox was quiet and unassuming, an earnest student, and a man of sound judgment and eminently suited to discharge the duties of a large and lucrative country practice, such as he was engaged in to the time of his death, which was caused by dropsy of the pericardium.

Dr. Cox leaves a wife and five children.

LIST OF MEMBERS

OF THE

OREGON STATE MEDICAL SOCIETY.

NAMES.	POST OFFICE ADDRESS.		ADM'TD.
Ashford, J. W.	Canyon City,	Oregon.	1882
Augur, James T.	McMinnville,	"	1878
Avery, A. G.	Portland,	"	1883
Bailey, F. A	Hillsboro,	"	1875
Baker, W. D.	Astoria,	"	1875
Bayley, J. R.	Corvallis,	"	1879
Beebe, Chas. E.	Goldendale,	Washington.	1882
Binswanger, Otto S.	Portland,	Oregon.	1883
Blair, Hannibal.	LaCenter,	Washington.	1883
Boyd, W. E. H.	McMinnville,	Oregon.	1881
Brown, James.	Portland,	"	1879
Calbreath, J. F.	Lafayette,	"	1880
Cauthorn, F. A.	Corvallis,	"	1879
Carpenter, H.	Salem,	"	1874
Charlton, Mrs. Callie.	East Portland,	"	1879
Chapman, W. Lang.	Portland,	"	1881
Clarke, Andrew.	Clackamas,	"	1881
Crang, F.	Astoria,	"	1880
Cusick, W. A.	Salem,	"	1877
Davidson, J. E.	Independence,	"	1877
Dodson, O. M.	Baker City	"	1881
Eaton, F. B.	Portland,	"	1876
Ferra, George.	Corvallis,	"	1879
Flett, Geo. H.	Roseburg,	"	1882
Flinn, M.	Gervais,	"	1876
Ford-Warren, Mrs. A. L.	Portland,	"	1877
Fraser, E. P.	Portland,	"	1879
Fulton, J. A.	Astoria,	"	1883
Ghiselin, J. T.	Portland,	"	1875
Giesy, A. J.	Salem,	"	1879
Giesy, M.	Aurora,	"	1874
Givens, Jno. W.	Salem,	"	1882
Glisan, R.	Portland,	"	1874
Golden, C. B.	Marshfield,	"	1881
Hall, C. H.	Salem,	"	1874
Harris, T. W.	Eugene,	"	1875
Hill, J. L.	Albany,	"	1874
Holmes, Reese.	Salem,	"	1877
Howard, J. W.	Canyon City,	"	1877
Hunt, Lydia M.	Portland,	"	1884
Josephi, S. E.	East Portland,	"	1878
Johnson, H. V. V.	McMinnville,	"	1879
Jones, H. E.	Portland,	"	1875

LIST OF MEMBERS—Continued.

NAMES.	POST OFFICE ADDRESS.		ADM'TD.
Jones, William	Portland,	Oregon,	1879
Kinney, Alf. C	Salem,	"	1874
Kirkpatrick, J. E	Dallas,	"	1881
Kitchen, J. M	Stayton,	"	1877
Lane, Harry	Portland,	"	1877
Lane, G. Cooke	Portland,	"	1883
Lee, J. B	Corvallis,	"	1879
Lee, N. L	Junction City,	"	1877
Lee, Wm. C	Junction City,	"	1881
Littlefield, H. R	Lafayette,	"	1875
McCauly, S. D	Stayton,	"	1874
Mackenzie, K. A. J	Portland,	"	1884
McCormac, J. T	Marshfield,	"	1883
McKay, W. C	Pendleton,	"	1874
Morgan, J. M	Spokane Falls,	Washington.	1877
Nicklin, A. I	Portland,	Oregon.	1874
Norris, J. W	Oregon City,	"	1880
Nottage, G. E	East Portland,	"	1875
Owens, B. A	Portland,	"	1882
Panton, A. C	Portland,	"	1884
Parrish, Mrs. Jennie L	Salem,	"	1879
Parker, S	Oregon City,	"	1874
Payton, D	Stockton,	California.	1874
Payton, J. E	Drain's,	Oregon.	1877
Power, I. N	Neah Bay,	Washington.	1877
Raffety, C. H	East Portland,	Oregon.	1875
Raffety, Dav	East Portland,	"	1883
Rex, R. G	Portland,	"	1875
Rinearson, F. B	LaGrande,	"	1878
Rowland, L. L	Salem,	"	1874
Royal, W. W	East Portland,	"	1881
Saylor, W. H	Portland,	"	1875
Sharples, A	Eugene,	"	1876
Smith, J. R	Vancouver,	Washington.	1881
Stott, J. S	Hillsboro,	Oregon.	1883
Strong, C. C	Portland,	"	1874
Tower, C. W	Empire City,	"	1880
Tuttle, Jay	Astoria,	"	1880
Tyler-Smith, W	Sheridan,	"	1881
Urquhart, R. A	Portland,	"	1884
Wade, Wm. L	Salem,	"	1880
Watkins, W. H	Portland,	"	1874
Watkins, Wm. B	Portland,	"	1884
Wells, G. M	Portland,	"	1882
Wheeler, C. H	Portland,	"	1881
Whiteaker, J. C	Cottage Grove,	"	1883
Williams. H. O	Palouse,	Washington.	1879
Wilson, H. C	Portland,	Oregon.	1880
Wilson, R. B	Portland,	"	1874
Worthington, C. E	McCoy.	"	1881

DROPPED.

The following names have been dropped from the roll of members for non-payment of dues:

W. F. Alexander, M. D.,
J. W. McAfee, M. D.,
H. W. Ross, M. D.,
T. J. Lee, M. D.,
Z. T. Dodson, M. D.,
J. M. Pruett, M. D.,
Brown, E. M., M. D.,
J. Reynolds, M. D.,
John Nicklin, M. D.,
H, Logan, M. D.,
Geo. J. Hill, M. D.,
W. F. Morrison, M. D.

HONORARY MEMBERS.

Baily, E. I., M. D., Lt. Col., U. S. A.	Washington,	District of Columbia.
Bevan, A. D., U. S. M. H. S.	Portland,	Oregon.
Chance, G. H., D. D. S.	"	"
Gibbons, H. Sr., M. D.	San Francisco,	California.
Gibbons, H. Jr., M. D.	"	"
Hill, R. C., M. D.	Albany,	Oregon.
McClellan, Eli, M. D., Maj. U. S. A.	Vancouver,	Washington.
Newell, Wm. A., M. D.	Olympia,	"
Marvin, Frederic R., M. D.	Portland,	Oregon.
Rice, D. B., M. D.	Albany,	"

DECEASED MEMBERS.

John Vite, M. D., December 11, 1876—aged 46 years.

E. R. Fiske, M. D., August 28, 1877—aged 61 years and 60 days.

J. P. Tate, M. D., June 14, 1878—aged 55 years and 210 days.

Mrs. E. A. J. F. Robinson, M. D., June 29, 1879—aged 22 years and 231 days.

A. M. Belt, M. D., August 18, 1881—aged 77 years and 26 days.

M. D. Jennings, M. D.

John T. Wells, M. D,, October 23, 1882—aged 36 years.

W. B. Cardwell, M. D., February 10, 1883—aged 41 years.

Philip Harvey, M. D., March 23, 1883—aged 78 years.

W. D. Cox, M. D., December 13, 1883—aged 45 years.

Wm. A. Howell, M. D., June 5, 1883—aged 33 years.

OFFICIAL REGISTER FROM TIME OF ORGANIZATION.

1874.

President, Alfred C. Kinney, M. D.; Vice President, J. L. Hill, M. D.; Secretary, C. H. Hall, M. D.; Corresponding Secretary, J. Reynolds, M. D.; Treasurer, L. L. Rowland, M. D.

1875.

President, R. Glisan, M. D.; Vice President, O. P. S. Plummer, M. D.; Permanent Secretary, Curtis C. Strong, M. D.; Corresponding Secretary, W. B. Cardwell, M. D.; Treasurer, L. L. Rowland, M. D.

1876.

President, W. H. Watkins, M. D.; Vice President, D. B. Rice, M. D.; Permanent Secretary, Curtis C. Stong, M. D.; Corresponding Secretary, A. C. Helm, M. D.; Treasurer, L. L. Rowland, M. D.

1877.

President, L. L. Rowland, M. D.; Vice President, W. C. McKay, M. D.; Permanent Secretary, Curtis C. Strong, M. D.; Corresponding Secretary, C. H. Hall, M. D.; Treasurer, J. P. Tate, M. D.

1878.

President, H. Carpenter, M. D.; Vice President, F. A. Bailey, M. D.; Permanent Secretary, Curtis C. Strong, M. D.; Corresponding Secretary, O. P. S. Plummer, M. D.; Treasurer, W. H. Watkins, M. D.; Librarian, L. L. Rowland, M. D.

1879.

President, D. B. Rice, M. D.; Vice President, W. B. Cardwell, M. D.; Permanent Secretary, Curtis C. Strong, M. D; Corresponding Secretary, W. H. Saylor, M. D.; Treasurer, R. Glisan, M. D.; Librarian, Curtis C. Strong, M. D.

1880.

President, F. A. Bailey, M. D.; Vice President, C. H. Merrick, M. D.; Permanent Secretary, Curtis C. Strong, M. D.; Corresponding Secretary, E. P. Fraser, M. D.; Treasurer, H. Carpenter, M. D.

1881.

President. C. H. Merrick, M. D.; Vice President, W. A. Cusick, M. D.; Permanent Secretary, E. P. Fraser, M. D.; Corresponding Secretary, W. H. Saylor, M. D.; Treasurer, H. Carpenter, M. D.

1882.

President, C. C. Strong, M. D.; Vice President, Mrs. J. L. Parrish, M. D.; Secretary, E. P. Praser, M. D.

Executive Board.

W. H. Watkins, M. D., R. G. Rex, M. D., S. E. Josephi, M. D., H. Carpenter, M. D., C. Charlton, M. D.

1883.

President, W. H. Saylor, M. D.; Vice President, J. W. Norris, M. D.; Secretary. E. P. Fraser, M. D.

Executive Board.

W. H. Watkins, M. D.; R. G. Rex, M. D.; S. E. Josephi, M. D.; H. Carpenter, M. D.; G. M. Wells, M. D.

1884.

President, S. E. Josephi, M. D.; Vice President, F. B. Eaton, M. D., Secretary, E. P. Fraser, M. D.

Executive Board.

R. Glisan, M. D., G. M. Wells, M. D., W. H. Watkins, M. D., R. G. Rex, M. D., K. A. J. Mackinzie, M. D.

FINANCIAL REPORT OF E. P. FRASER, M. D.

For the year ending May 29, 1884.

1883.		Dr.			
June	14	On hand last report			$ 318 26
"	15	Harry Lane	Dues to	1884	3 00
"	15	G. C. Lane	"	1884	5 00
"	16	D. W. Cox	"	1884	3 00
"	16	C. E. Worthington	"	1884	3 00
"	21	C. E. Bebee	"	1884	5 00
"	29	W. A. Cusick	"	1884	3 00
July	25	R. Glisan	"	1884	9 00
Aug.	18	G. S. Allison	"	1884	3 00
"	21	W. F. Pruden	"	1884	3 00
"	22	Adv. in Vol. X			30 00
"	25	M. A. Flinn	"	1884	12 00
"	25	J. F. Calbreath	"	1884	6 00
"	25	Geo. H. Flett	"	1884	3 00
Nov.	20	Geo. Ferra	"	1884	3 00
1884.					
Jan.	9	Jay Tuttle	On account		5 00
"	9	Reese Holmes	"		5 00
Mar.	20	J. L. Parrish	Dues to	1884	3 00
May	15	F. B. Rinearson	On account		2 00
"	20	James Browne	Dues to	1885	3 00
"	20	T. J. Ghiselin	"	1885	3 00
"	22	R. Glisan	"	1885	3 00
"	22	J. W. Howard	"	1885	6 00
"	24	J. M. Kitchen	"	1885	12 00
"	24	O. S. Binswanger	"	1885	3 00
"	27	W. H. Saylor	"	1884	3 00
"	27	H. C. Wilson	"	1885	9 00

1884.		Dr.			
May	27	R. B. Wilson	Dues to	1885	$ 6 00
"	27	C. C. Strong	"	1884	6 00
"	27	F. B. Eaton	"	1885	3 00
"	27	A. J. Giesy	"	1884	3 00
"	27	H. Carpenter	"	1884	3 00
"	27	J. W. Givens	"	1885	3 00
"	27	J. W. Norris	"	1885	3 00
"	37	Wm. Jones	"	1885	3 00
"	28	F. Crang	"	1885	3 00
"	28	A. L. Ford-Warren	"	1884	8 00
"	28	G. M. Wells	"	1885	3 00
"	28	J. L. Hill	"	1885	6 00
"	28	C. H. Wheeler	"	1885	3 00
"	28	Harry Lane	"	1885	3 00
"	28	B. A. Owens	"	1885	3 00
"	28	G. C. Lane	"	1885	3 00
"	28	Callie Charlton	"	1885	6 00
"	28	S. E. Josephi	"	1884	3 00
"	28	Lydia M. Hunt	"	1885	5 00
					$ 542 26

1883.		Cr.	
June	20	Rent of Union Hall	$ 15 00
July	6	Printing Programmes	9 25
"	7	Envelopes and letter heads	7 00
Aug.	21	Three hundred three cent stamps	9 00
"	23	Express	1 00
"	25	Printing transactions	145 15
Sept.	1	Fifty postal cards and fifty stamps	1 00
Dec.	31	Salary	50 00
May	2	Postage stamps	2 00
"	16	" "	1 00
"	29	To balance	301 86
			$ 542 26